PIONEER®
The Art of Entertainment

Service Manual

ORDER NO.
ARP2163

STEREO CASSETTE DECK

CT-449 HEM, HB
CT-449-S HEWM

MODEL CT–449 AND CT–449–S HAVE FOLLOWING VERSIONS:

Type	Applicable model		Power requirement	Export destination
	CT–449	CT–449–S		
HEM	○	–	AC220V, 240V (switchable)*	European continent
HB	○	–	AC220V, 240V (switchable)*	United Kingdom
HEWM	–	○	AC220V, 240V (switchable)*	European continent

*Change the primary wiring of the power transformer.

- **Refer to the service manual ARP2009, CT–447.**
- **This manual is applicable to the CT–449/HEM, HB and CT–449–S/HEWM types.**

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.
PIONEER ELECTRONICS OF CANADA, INC. 505 Cochrane Drive, Markham, Ontario L3R 8E3 Canada
PIONEER ELECTRONIC [EUROPE] N.V. Keetberglaan 1, 2740 Beveren, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911
© PIONEER ELECTRONIC CORPORATION 1991
SI FEB. 1991 Printed

1. CONTRAST OF MISCELLANEOUS PARTS

NOTES:
- Parts without part number cannot be supplied.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

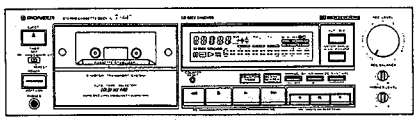
The CT–449/HB, CT–449–S/HEWM and CT–449/HEM types are the same as the CT–447/HEM type with exception of the following sections.

Mark	Symbol & Description	Part No.				Remarks
		CT–447 /HEM type	CT–449 /HB type	CT–449–S /HEWM type	CT–449 /HEM type	
⚠	AC power cord	PDG1003	PDG1036	PDG1003	PDG1003	
	Slide SW knob (A)	RAC–668	.....	RAC1219	.....	
	Slide SW knob (B)	.....	RAC–669	.....	RAC–669	
	Tape select knob	RAC1230	RAC1230	RAC1308	RAC1230	
	Tact knob	RAC1349	RAC1349	RAC1347	RAC1349	
	Eject knob	RAC1361	RAC1361	RAC1494	RAC1361	
	Control knob	RAC1362	RAC1362	RAC1495	RAC1362	
	VR knob	RAC1363	RAC1363	RAC1496	RAC1363	
	Power button	RAC1364	RAC1364	RAC1497	RAC1364	
	Headphone knob	RAC1366	RAC1366	RAC1498	RAC1366	
	Door panel	RAH1678	RAH1811	RAH1819	RAH1811	
	Button panel	RAH1680	RAH1680	RAH1681	RAH1680	
	Eject mold	RNK1313	RNK1313	RNK1314	RNK1313	
	VR escutcheon	RNK1315	RNK1315	RNK1316	RNK1315	
	Bonnet	RXX1292	RXX1396	RXX1397	RXX1396	
	Front panel assembly	RXX1293	RXX1394	RXX1395	RXX1394	
	Packing case	RHG1197	RHG1250	RHG1263	RHG1250	
	Connection cord assembly	RDE1005	RDE1002	RDE1002	RDE1002	
	Control cord	RDE1018	RDE1030	RDE1030	RDE1030	
	Operating instructions (English)	RRB1062	.....	.....	.....	
	Operating instructions (Spanish, French, German, Italian Dutch, Portuguese, Swedish)	RRD1077	.....	.....	.....	
	Operating instructions (English)	.....	RRB1083	RRB1083	RRB1083	
	Operating instructions (Spanish, French, German, Italian Dutch, Portuguese, Swedish)	.....	.....	RRD1091	RRD1091	

334

Service Manual

PIONEER®
The future of sound and vision.



ORDER NO.
ARP 2009

STEREO CASSETTE DECK

CT-447
CT-447S

MODEL CT-447 AND CT-447-S HAVE FOLLOWING VERSIONS:

Type	Applicable model		Power requirement	Export destination
	CT-447	CT-447-S		
HEM	○		AC 220V, 240V (switchable) *	European continent
HB	○		AC 220V, 240V (switchable) *	United Kingdom
HEWM		○	AC 220V, 240V (switchable) *	European continent

* Change the primary wiring of the power transformer.

- This manual is applicable to the HEM, HB and HEWM types.
- As to the HB and HEWM types, refer to page 40.
- The CT-447-S is the same as the CT-447 except for color.
- Ce manual pour le service comprend les explications de réglage en français.
- Este manual de servicio trata del método ajuste escrito en español.

CONTENTS

1. PACKING 2
2. EXPLODED VIEWS AND PARTS LIST 3
3. IC BLOCK DIAGRAM 9
4. BLOCK DIAGRAM 10
5. SCHEMATIC DIAGRAM 12
6. P.C. BOARDS CONNECTION DIAGRAM 15
7. P.C.B'S PARTS LIST 23
8. ADJUSTMENTS 26
   RÉGLAGE 30
   AJUSTE 34
9. IC INFORMATION 38
10. FOR CT-447/HB AND CT-447-S/HEWM TYPES 40
11. PANEL FACILITIES 41
12. SPECIFICATIONS 43

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.
PIONEER ELECTRONICS OF CANADA, INC. 505 Cochrane Drive, Markham, Ontario L3R 8E3 Canada
PIONEER ELECTRONIC [EUROPE] N.V. Keetberglaan 1, 2740 Beveren, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911

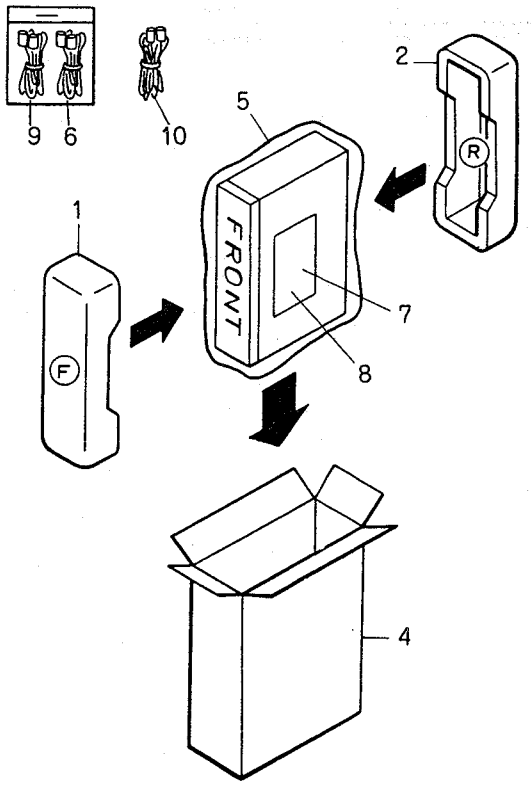
© PIONEER ELECTRONIC CORPORATION 1990

SEI APR. 1990 Printed in Japan

1. PACKING

Parts List

Mark	No.	Description	Parts No.
	1	Pad (A)	RHA1006
	2	Pad (B)	RHA1007
	3	- - - - - - - - - - -	
	4	Packing case	RHG1197
	5	Sheet	RHX-034
	6	Control code	RDE1018
	7	Operating instructions (English)	RRB1062
	8	Operating instructions (Spanish)	RRD1077
	9	Control code	RDE-010
	10	Control code (MINI)	RDE-319



2. EXPLODED VIEWS AND PARTS LIST

NOTES:

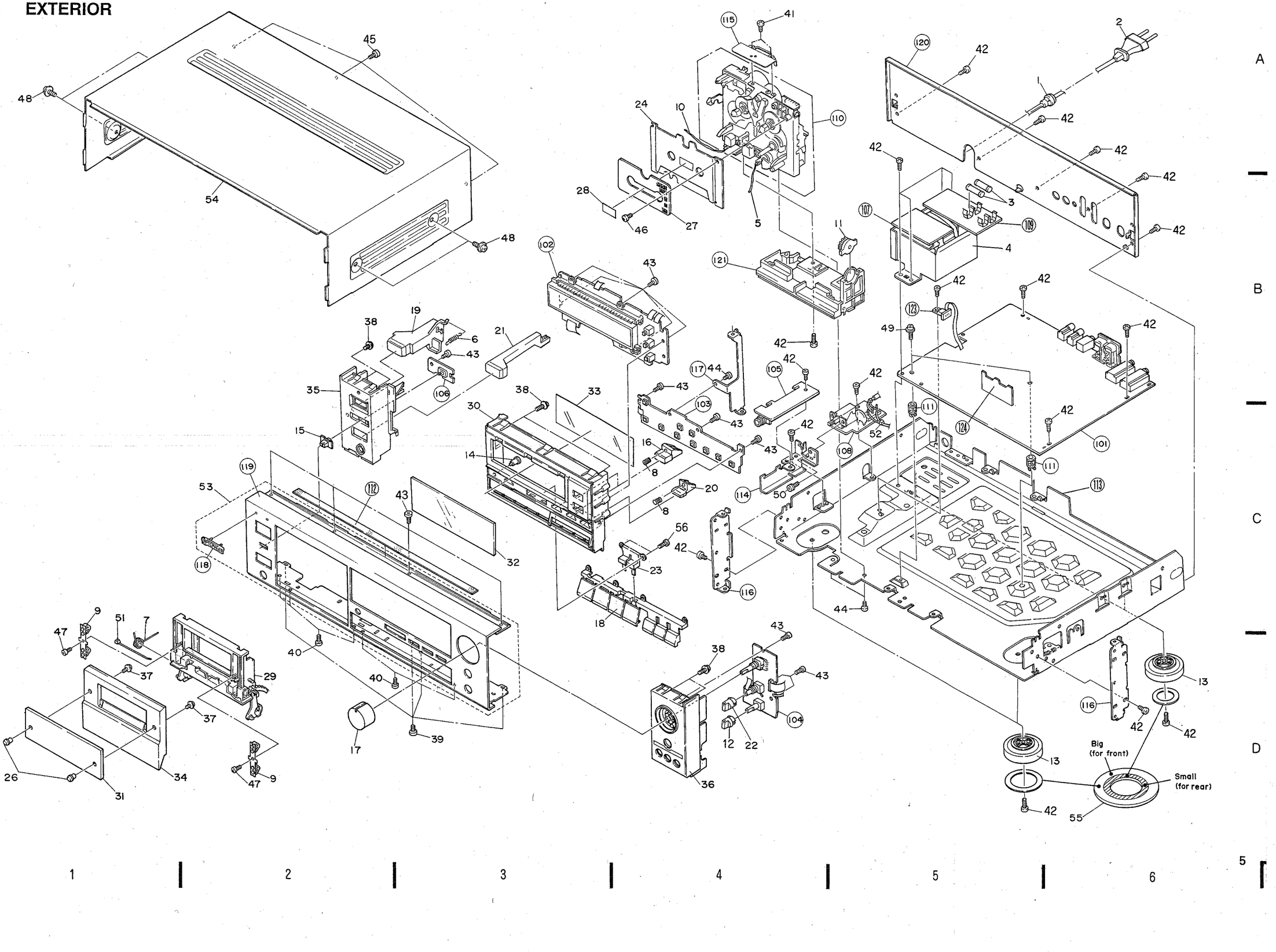
- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

2.1 Parts List of Exterior

Mark	No.	Description	Parts No.
⚠	1	Strain relief	CM-22B
⚠	2	Power cord	PDG1003
⚠	3	Fuse (FU1, FU2, 1.25A)	REK-101
⚠	4	Power transformer (T1)	RTT1137
	5	Connector (3P)	RKP1360
	6	Ratchet spring	RBH1008
	7	Door spring (L)	RBH1134
	8	Push spring	RBH1146
	9	Half pressure spring	RBK1004
	10	Connector (2P)	RKP1361
	11	Damper ass'y	REC1005
	12	Knob (PHONES LEVEL)	RAC1416
	13	Insulator	VNK1095
	14	Knob (COUNTER RESET)	RAA1009
	15	Knob (A) (TIMER)	RAC-668
	16	Knob (AUTO BLE, LEVEL METER, WIDE/EXPND)	RAC1218
	17	Knob (REC LEVEL)	RAC1363
	18	Knob (◂◂, ■, ▸, ▸▸, ●, ❚❚, ⏏)	RAC1362
	19	Knob (EJECT)	RAC1361
	20	Knob (CD SYNCHRO, DOLBY ON/OFF, B/C TYPE)	RAC1230
	21	Knob (POWER)	RAC1364
	22	Knob (REC BALANCE)	RAC1366
	23	Knob (COUNTER MODE, BLANK SEARCH)	RAC1349
	24	Cassette plate	RAH1234
	25	- - - - - - - - - - -	
	26	Screw	RAT1001
	27	Stabilizer (B)	REB1038
	28	Remain display paper	REE-113
	29	Door pocket	RNT1010
	30	Button panel	RAH1680
	31	Door lens	RAH1244
	32	Meter lens	RAH1246
	33	FL filter	RAH1245
	34	Door panel	RAH1678
	35	Eject mold	RNK1313

Mark	No.	Description	Parts No.
	36	VR escutcheon	RNK1315
	37	Screw	ABZ26P050FMC
	38	Screw	ABZ30P080FMC
	39	Screw	BBT30P060FZK
	40	Screw	BBZ26P080FZK
	41	Screw	BBZ30P040FMC
	42	Screw	IBZ30P080FCC
	43	Screw	BBZ30P080FMC
	44	Screw	BBZ30P100FZK
	45	Screw	BBZ30P080FCC
	46	Screw	BCT26P100FZK
	47	Screw	BPZ20P060FMC
	48	Screw	FBT40P080FZK
	49	Screw	IBZ30P150FCU
	50	Screw	PMA30P060FCU
	51	Binder	REC-265
	52	Binder	REC-371
	53	Front panel ass'y	RXX1293
	54	Bonnet	RXX1292
	55	Stopper	VEC1061
	56	Screw	BBZ30P060FZK
	101	Main unit	
	102	Display unit	
	103	Control SW unit	
	104	VR unit	
	105	Headphone unit	
	106	Timer SW unit	
	107	Transformer 1 unit	
	108	Power SW unit	
	109	Transformer 2 unit	
	110	Mechanism unit	
	111	PCB spacer	
	112	Bonnet cushion	
	113	Main chassis	
	114	Headphone bracket	
	115	Mechanism stay	
	116	Side stay	
	117	Center stay	
	118	Name plate	
	119	Front panel	
	120	Rear panel	
	121	Door fulcrum mold	
	122	- - - - - - - - -	
	123	Regulator IC unit	
	124	HX unit	

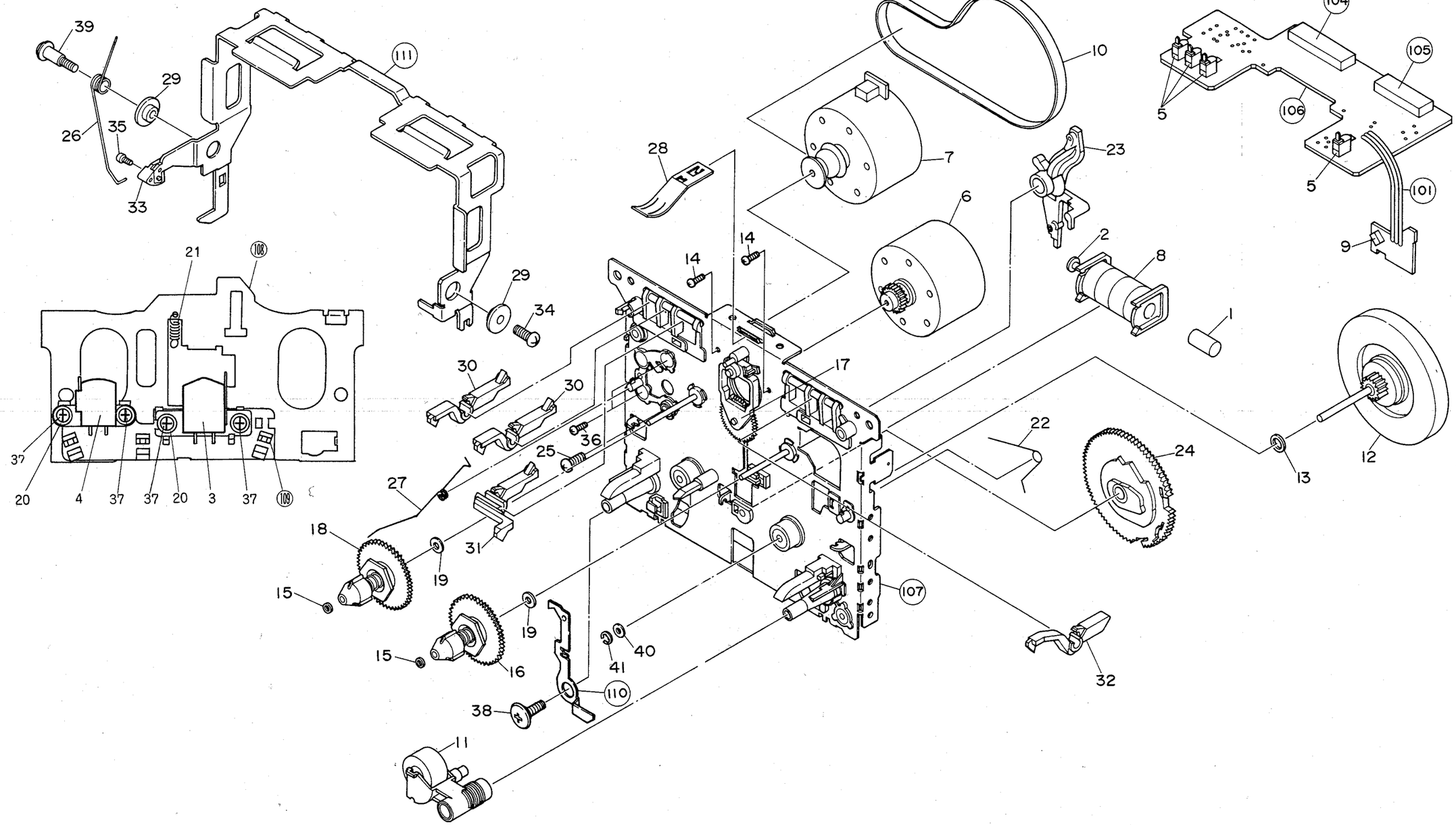
2.1 EXTERIOR



2.2 Parts List of Mechanism Unit

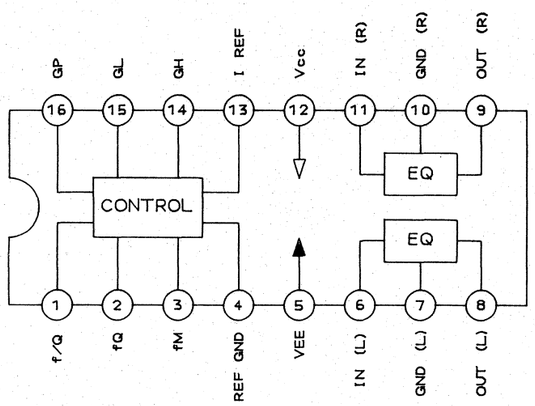
Mark	No.	Description	Parts No.
	1	Fixed core	RLA1130
	2	Planger	RLA1132
	3	Head (R/P)	RPB1039
	4	Head (E)	RPB1040
	5	Push SW	RSG1018
	6	MTR reel BLK	RXM1029
	7	MTR main BLK	RXM1032
	8	Solenoid BLK	RXP1010
	9	Photo-transistor	SPI3534FG
	10	Main belt	REB1134
	11	Pinch roller ass'y	RXA1183
	12	F/W ass'y	RXA1346
	13	Washer	WA26D045D025
	14	Pan 2.6×6.4 ZN	RBA1076
	15	Washer	RBF-057
	16	Reel base BLK	RXA1184
	17	Idle BLK	RXA1248
	18	Reel base BLK	RXC-040
	19	Washer	WA21D070D013
	20	Azimuth SP	RBH1076
	21	Head base SP	RBL1003
	22	Slide SP	RBH1239
	23	Play arm	RNK1525
	24	Cam gear (3R)	RNK1526
	25	Pan TT 2.6×5 ZN	RBA1079
	26	Lever SP(L) (EJECT)	RBH1231
	27	SP cap(L) (EJECT)	RBH1234
	28	Spring (CASETTE)	RBK1031
	29	Lever (Color A)	RLA1133
	30	Detector lever (REC)	RNK1527
	31	Metal dector lever (L)	RNK1529
	32	Dector lever (P)	RNK1543
	33	Hook	RNM-160
	34	Screw	PBZ30P080FMC
	35	Screw	PCZ20P040FMC
	36	Screw	PMZ26P050FMC
	37	F lock screw	RBA1031
	38	Screw (7.7)	RBA1048
	39	Screw	RBA1078
	40	Washer	WA26D047D050
	41	Washer	YE15FUC
	101	Jumper (3P)	
	104	Connector (8P)	
	105	Connector (6P)	
	106	P.C. board	
	107	Chassis base BLK	
	108	Head base	
	109	Head spacer	
	110	Arm cap (L) (EJECT)	
	111	Lever (EJECT)	

2.2 MECHANISM UNIT

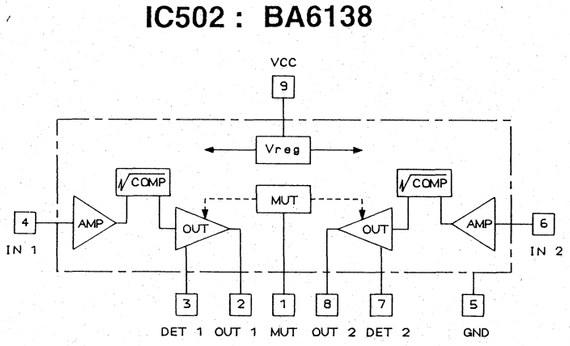


3. IC BLOCK DIAGRAM

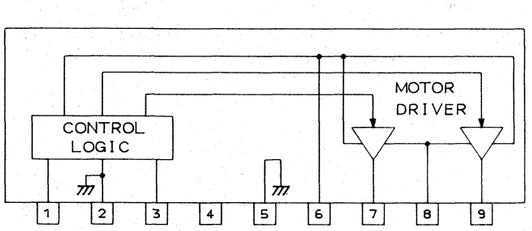
IC301 : CXA1198AP-A



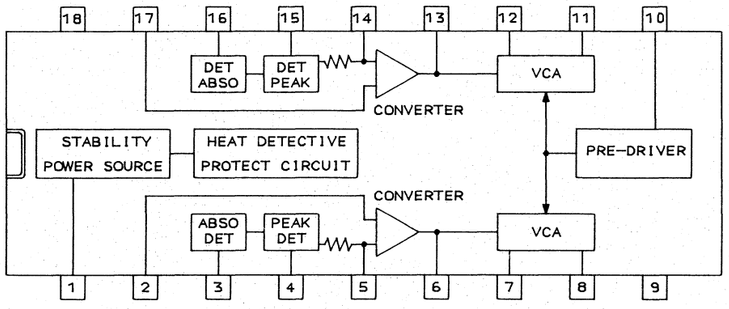
IC502 : BA6138



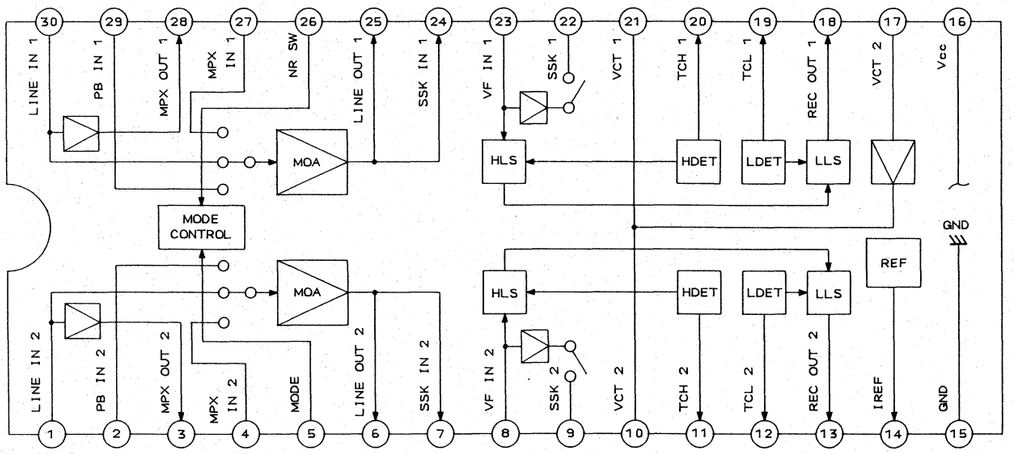
IC901 : BA6218



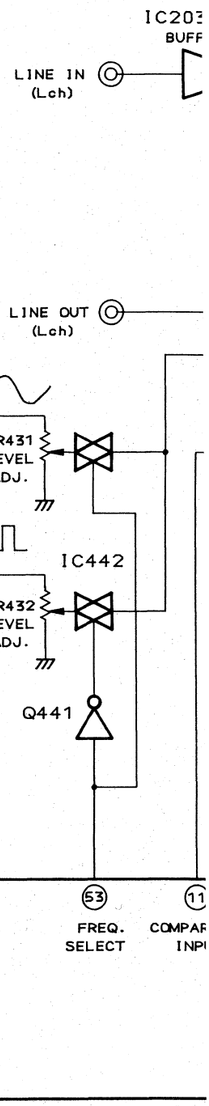
IC601 : MPC1297CA



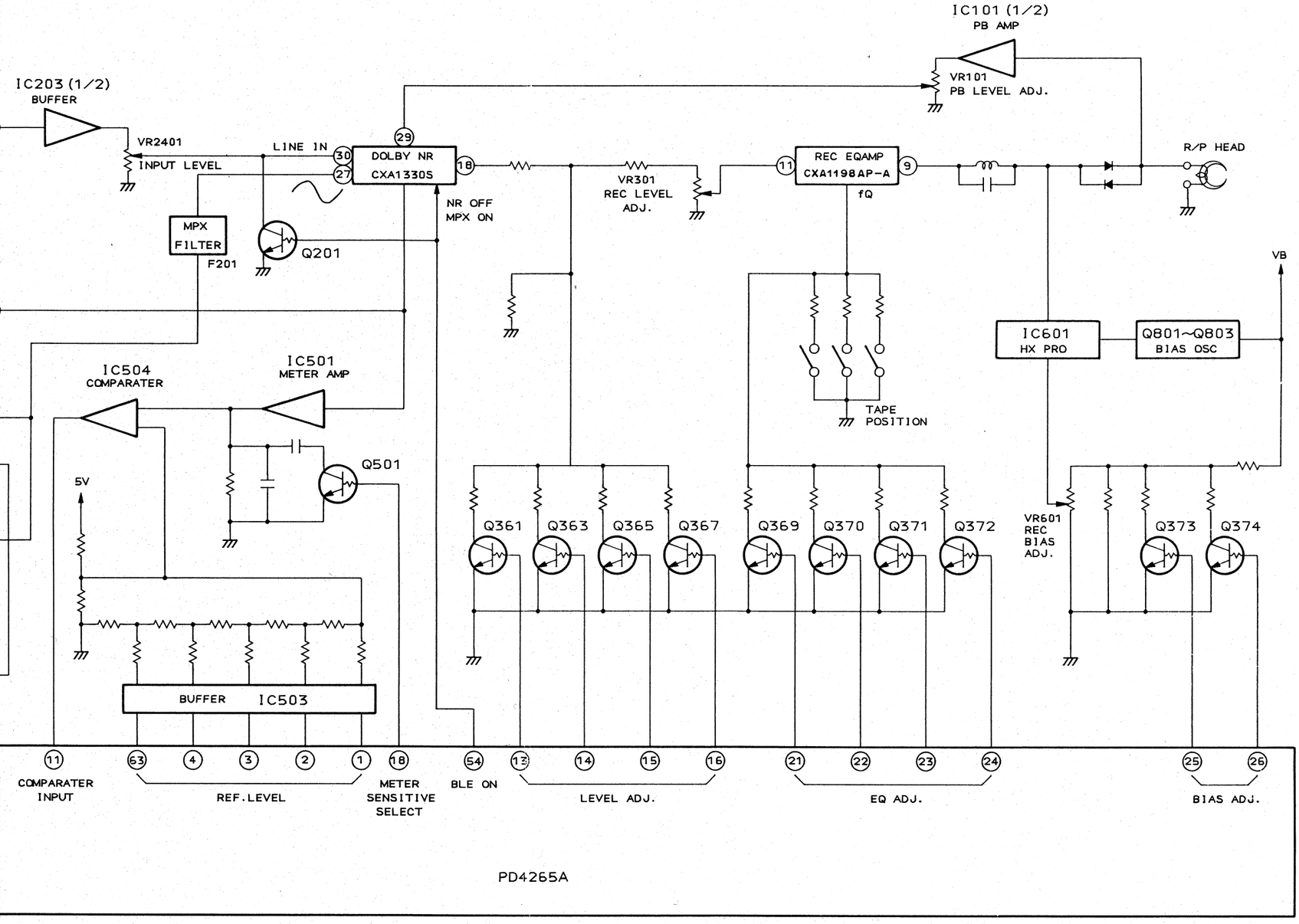
IC201 : CXA1330S



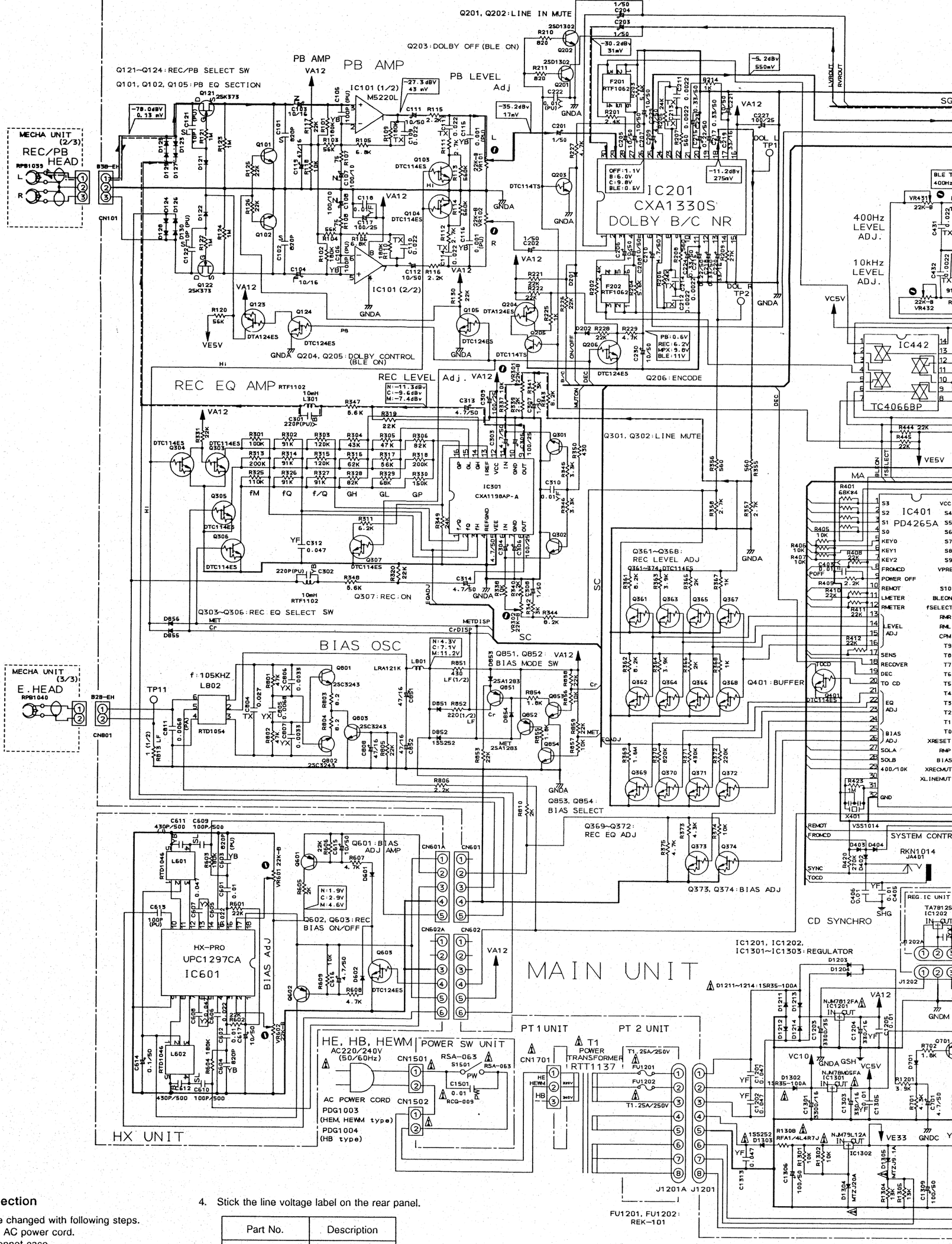
4. BLOCK DIAGRAM



IC101 (1/2)
PB AMP



5. SCHEMATIC DIAGRAM



Line Voltage Section

Line voltage can be changed with following steps.

1. Disconnect the AC power cord.
2. Remove the Bonnet case.
3. Change the connection of the TRANSFORMER 1 UNIT UNIT primary pins.
4. Stick the line voltage label on the rear panel.

Part No.	Description
AAX-193	220V label
AAX-192	240V label

HEM, HEWM 220V ——
HB 240 V - - - -

LINE IN/OUT

RKB1001

JA201 (3/4) JA201 (4/4) JA201 (1/4) JA201 (2/4)

H.PHONE AMP

Q1601, Q1602:LINE MUTE

IC1601 (1/2) M5218L

IC1601 (2/2)

Q211, Q212:LINE MUTE

H.PHONE UNIT

VR MAX -21.5dBV 84mV

RKN1002 JA1601

J1601 J1601A

GSH

SG

SC

M5218L IC431 (1/2) 400Hz L.P.F. AMP

400Hz LEVEL ADJ.

10kHz LEVEL ADJ.

BLE TEST TONE 400Hz 7.4dBv

BLE TEST TONE 10kHz 5Vp-p

IC431 (2/2)

10kHz Buffer AMP

IC442

IC442, Q441 : BLE SW

Q441 DTC114ES

TC4066BP

INPUT BUFFER M5218L IC203 (1/2)

IC203 (2/2)

Q402 LINE MUTE

Q403 REC MUTE

MIC AMP

IC202 (1/2) M5218L

IC202 (2/2)

JA203 RKN1003

RKN1003 JA204

FL2401 RAW1053

DISPLAY UNIT

IC401 PD4265A

IC501 : METER ADJ AMP

IC502 : LOGARITHM COMPRESSOR AMP IC502 BA6138

IC501 (1/2) M5218L

IC501 (2/2)

Q501, Q502 : RECOVERY TIME SWITCHING

TC4050BP IC503

IC503 : BEFFER

IC504 (1/2) M5233L

IC504 (2/2)

IC504 : METER AMP

Q2401~Q2405 : FL IND DRIVER

CONTROL SW UNIT

REW STOP PLAY

PAUSE REC FF

BLANK SEARCH COUNTER MODE MUTE

COUNT RESET

S2101~S2108 RSG-155

S2109, S2110 RSG-143

CN404 J404

CN405 J405

CN406 J406 INPUT

VR UNIT

HEAD PHONE

BALANCE

CN403 CN407

J403 J407

SYSTEM CONTROL

REG.IC UNIT TA7812S IC1202

R.M CONTROL IC901 BA6218

Q908 : SENSING

Q905 : CPM DRIVE

Q906, Q907 : SOL DRIVE

SR REMOCON

Q701~Q704 : POWER OFF & RESET

IC1303 NJM79L05A

MECHA UNIT (1/3)

CM SOL RM

AUTO BLE TEST MODE

CN401 J401

TIMER SW UNIT

T.REC OFF T.PLAY REPEAT

NOTE : If the parts are not identified in the the diagram. the followings are used.

1SS254

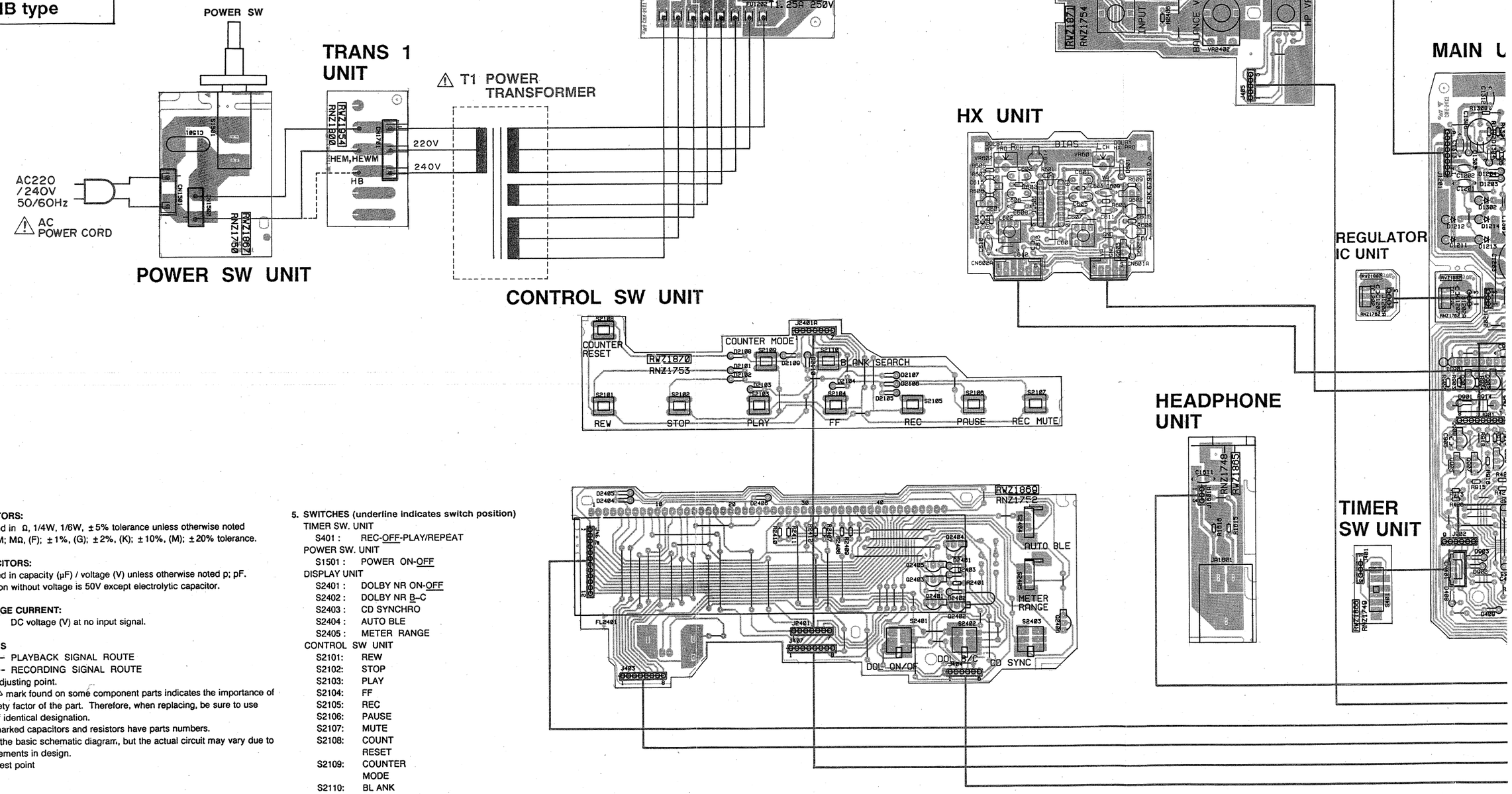
NPN 2SC3311A

PNP 2SA1309A

6. P.C. BOARDS CONNECTION DIAGRAM

- View from component side

HEM, HEWM, HB type



1. **RESISTORS:**
   Indicated in Ω, 1/4W, 1/6W, ±5% tolerance unless otherwise noted
   K; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance.

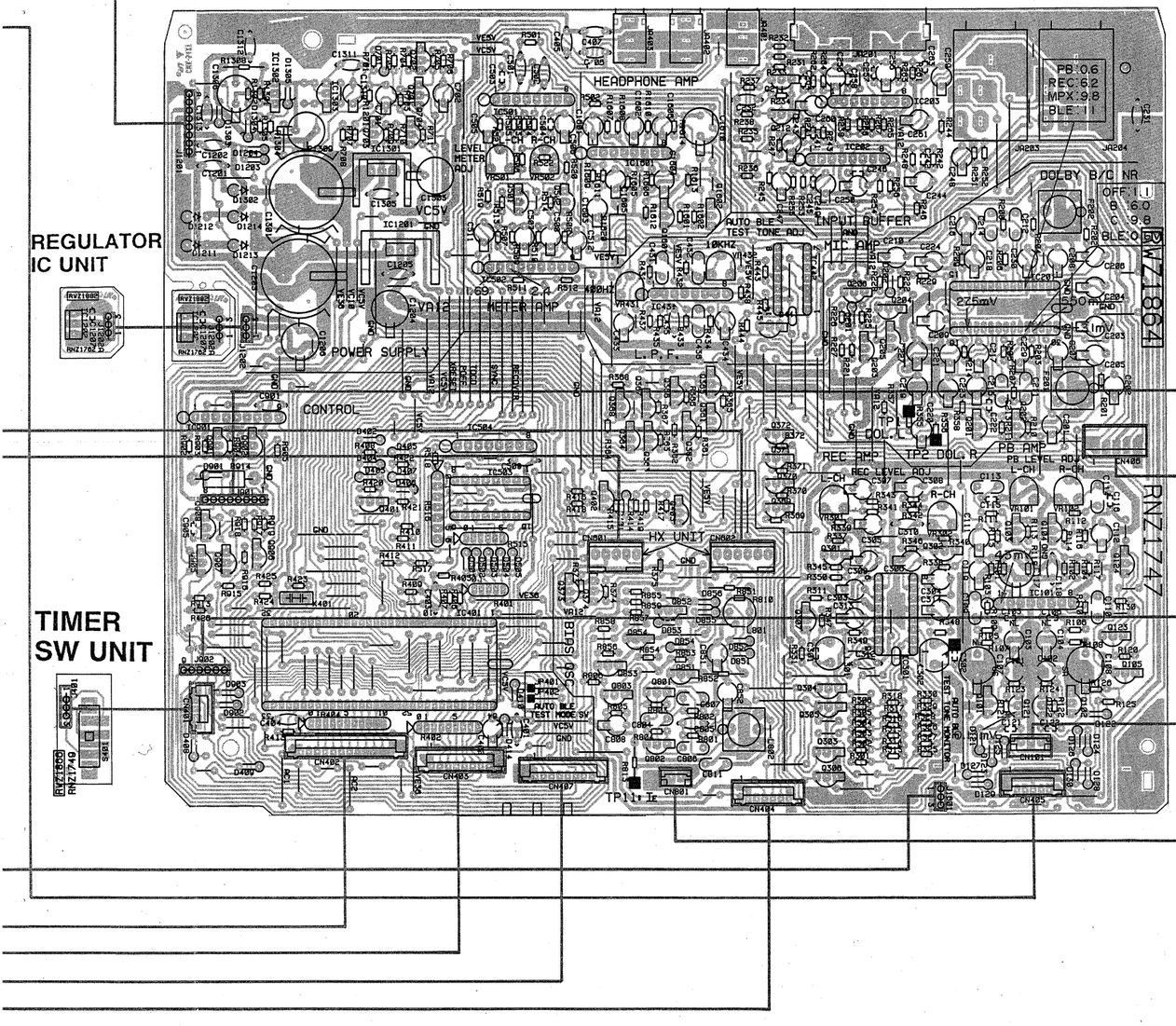
2. **CAPACITORS:**
   Indicated in capacity (μF) / voltage (V) unless otherwise noted p; pF.
   Indication without voltage is 50V except electrolytic capacitor.

3. **VOLTAGE CURRENT:**
   ▭; DC voltage (V) at no input signal.

4. **OTHERS**
   ——— PLAYBACK SIGNAL ROUTE
   ------- RECORDING SIGNAL ROUTE
   ⊘; Adjusting point.
   The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
   ※ marked capacitors and resistors have parts numbers.
   This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.
   ▶; Test point

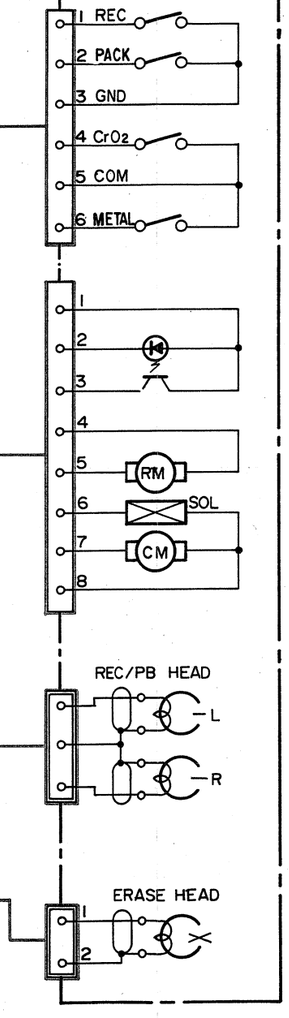
5. **SWITCHES (underline indicates switch position)**
   TIMER SW. UNIT
   S401 : REC-OFF-PLAY/REPEAT
   POWER SW. UNIT
   S1501 : POWER ON-OFF
   DISPLAY UNIT
   S2401 : DOLBY NR ON-OFF
   S2402 : DOLBY NR B-C
   S2403 : CD SYNCHRO
   S2404 : AUTO BLE
   S2405 : METER RANGE
   CONTROL SW UNIT
   S2101: REW
   S2102: STOP
   S2103: PLAY
   S2104: FF
   S2105: REC
   S2106: PAUSE
   S2107: MUTE
   S2108: COUNT RESET
   S2109: COUNTER MODE
   S2110: BL ANK SEARCH

MAIN UNIT



VR501	Q701		Q211
VR502	Q702	IC501	IC203
	IC1303		Q212
	IC1302		
	Q703		
	Q704	IC1601	IC202
	IC1301		
		Q501	
		Q502	
		Q1602	
		Q1601	
VR432	IC1201	IC502	IC442
VR431		IC431	Q206
			Q204
			Q441 IC201
			Q205
			Q203
		Q365	
		Q366	
		Q367	Q201
	IC901	Q368	Q202
	IC504	Q361	Q372
	Q901	Q362	Q371
VR101	Q902	Q363	Q370
VR102	IC503	Q364	Q369
VR301	Q908	Q402	Q103
VR302	Q401	Q403	Q301 Q104
	Q905		Q302 Q124
	Q906		Q307
	Q907	Q373	IC301 IC101
		Q374	Q123
		Q852	Q105
		Q854	Q101
	IC401	Q853	Q121
		Q851	Q122
		Q803	Q102
		Q801	Q304
			Q305
		Q802	
			Q303
			Q306

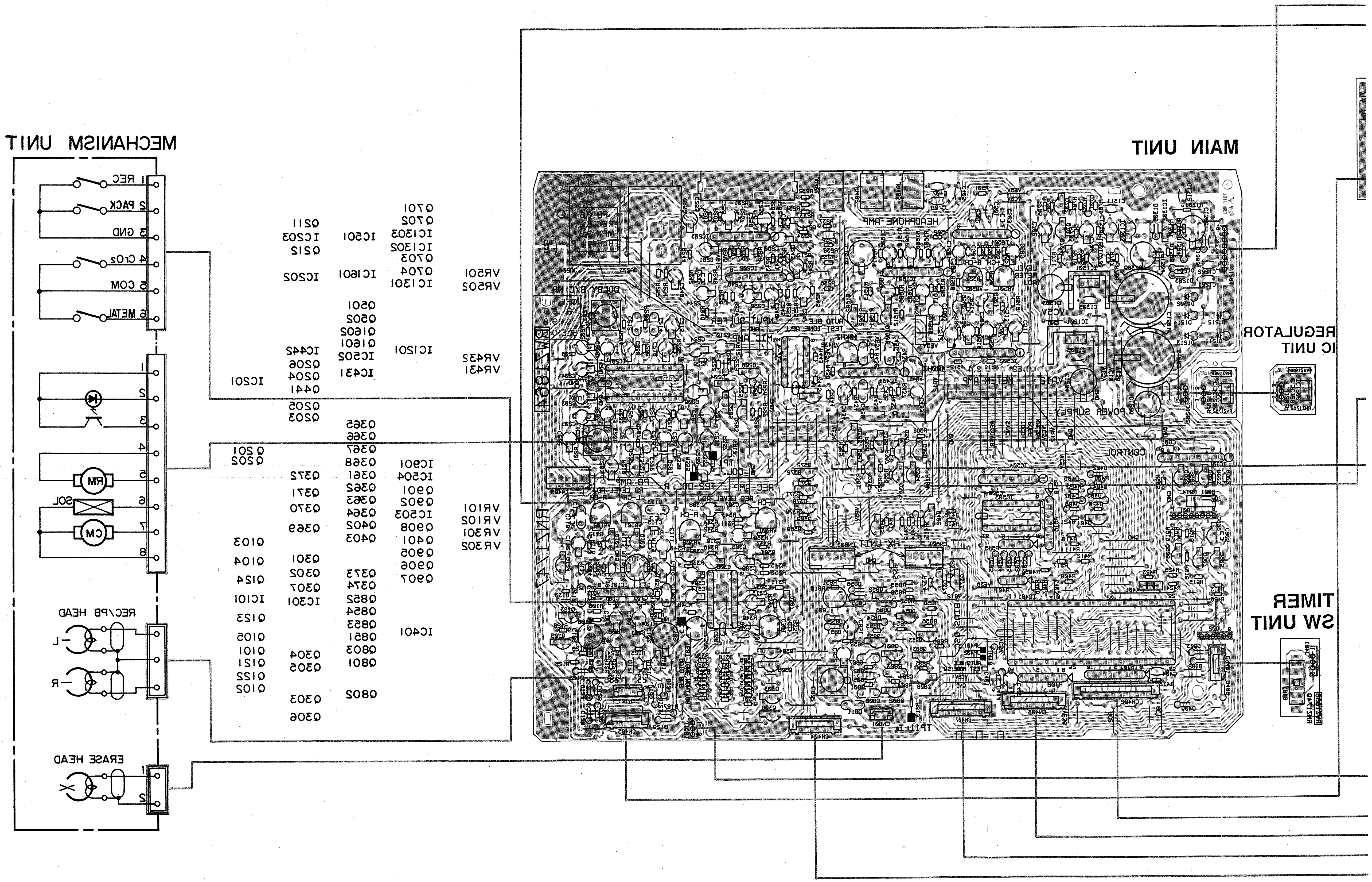
MECHANISM UNIT

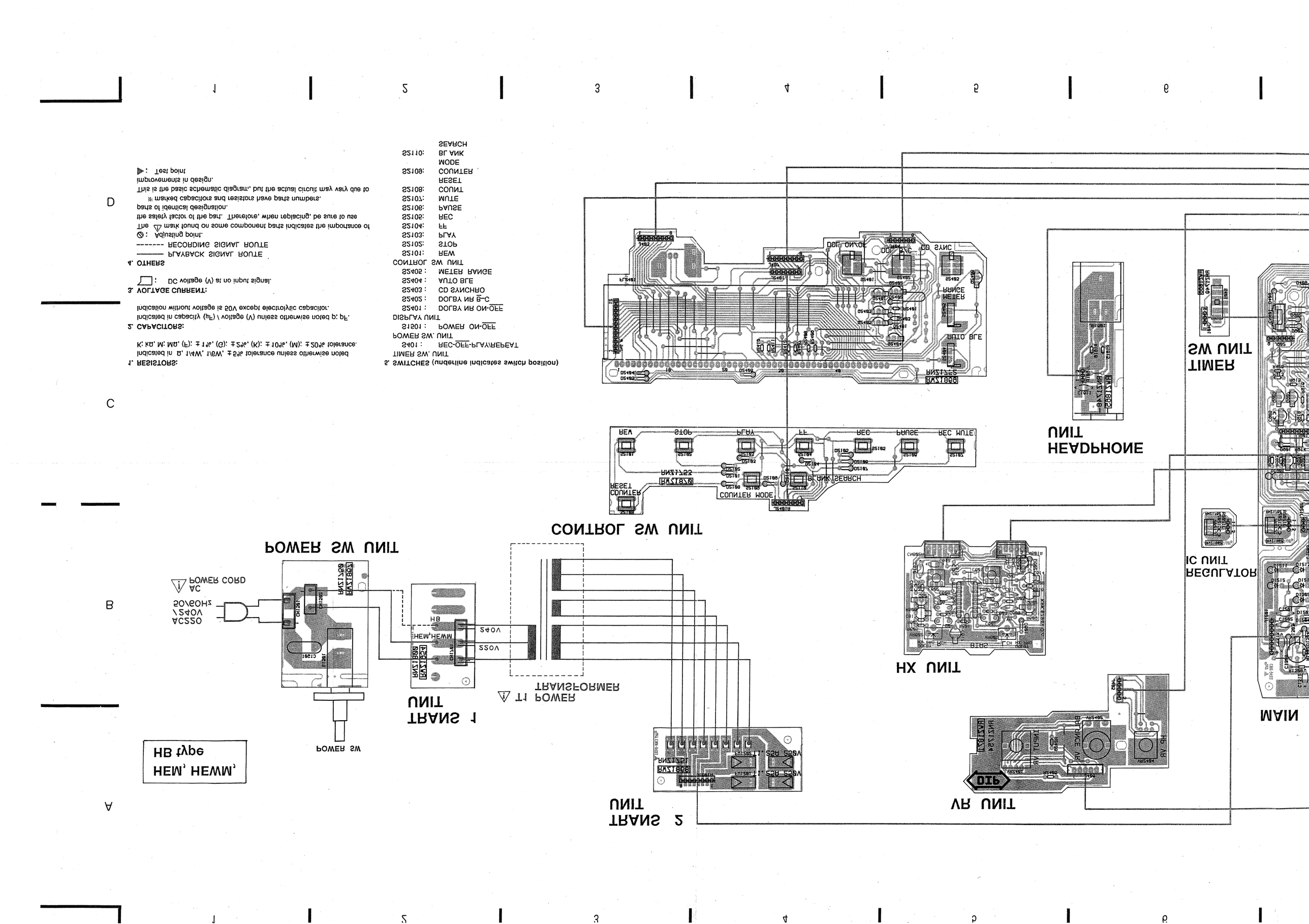


P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor
		FET
		Diode
		Zenner diode
		LED
		Varactor
		Tact switch
		Inductor
		Coil
		Transformer
		Filter
		Ceramic capacitor
		Mylar capacitor
		Styrol capacitor
		Electrolytic capacitor (Non polarized)
		Electrolytic capacitor (Noiseless)
		Electrolytic capacitor (Polarized)
		Electrolytic capacitor (Polarized)
		Power capacitor
		Semi-fixed resistor
		Resistor array
		Resistor
		Resonator
		Thermistor

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.

- **View from soldering side**


MECHANISM UNIT
1 REC
2 PACK
3 GND
4 CrO2
5 COM
6 METAL
RM
SOL
CM
REC/PB HEAD
L
R
ERASE HEAD
MAIN UNIT
REGULATOR IC UNIT
TIMER SW UNIT
Q211 IC203 Q212 IC202
IC442 Q206 Q204 Q441 Q205 Q203
IC201
Q201 Q202
Q372 Q371 Q370 Q369
Q103 Q104 Q124 IC101 Q123 Q105 Q101 Q121 Q122 Q102
Q301 Q302 Q307 IC301 Q304 Q305 Q303 Q306
IC501 IC1601
Q501 Q502 Q1602 Q1601 IC502 IC431
Q365 Q366 Q367 Q368 Q361 Q362 Q363 Q364 Q402 Q403
Q373 Q374 Q852 Q854 Q853 Q851 Q803 Q801 Q802
Q701 Q702 IC1303 IC1302 Q703 Q704 IC1301
IC1201
IC901 IC504 Q901 Q902 IC503 Q908 Q401 Q905 Q906 Q907
IC401
VR501 VR502
VR432 VR431
VR101 VR102 VR301 VR302



D

C

B

A

1. RESISTORS:
   Indicated in Ω, 1/4W, 1/8W, ±2% tolerance unless otherwise noted
   K: kΩ, M: MΩ, (E): ±1%, (G): ±2%, (K): ±10%, (M): ±20% tolerance.

2. CAPACITORS:
   Indicated in capacity (μF) \ voltage (V) unless otherwise noted by: pF.
   Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE CURRENT:
   : DC voltage (V) at no input signal.

4. OTHERS
   ——— PLAYBACK SIGNAL ROUTE
   - - - - - - - RECORDING SIGNAL ROUTE
   : Adjusting point.
   The ▽ mark found on some component parts indicates the importance of the safety factor of the part. (Therefore, when replacing, be sure to use parts of identical designation.
   ※: marked capacitors and resistors have parts numbers.
   This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.
   : Test point

2. SWITCHES (underline indicates switch position)
   TIMER SW. UNIT
   SW401 : REC-OFF-PLAY\REPEAT
   POWER SW. UNIT
   SW101 : POWER ON-OFF
   DISPLAY UNIT
   SW201 : POWER ON-OFF
   SW401 : DOLBY NR ON-OFF
   SW402 : DOLBY NR B-C
   SW403 : CD SYNCHRO
   SW404 : AUTO BLE
   SW405 : METER RANGE
   CONTROL SW UNIT
   SW101: REW
   SW102: STOP
   SW103: PLAY
   SW104: FF
   SW105: REC
   SW106: PAUSE
   SW107: MUTE
   SW108: COUNT
   RESET
   SW109: COUNTER
   MODE
   SW110: BL ANK
   SEARCH

7. P.C.B's PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex. 1 *When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).*

560Ω	*56 × 10¹*	*561*	*RD1/4PS 5 6 1 J*
47kΩ	*47 × 10³*	*473*	*RD1/4PS 4 7 3 J*
0.5Ω	*0R5*		*RN2H 0 R 5 K*
1Ω	*010*		*RS1P 0 1 0 K*

Ex. 2 *When there are 3 effective digits (such as in high precision metal film resistors).*

5.62kΩ	*562 × 10¹*	*5621*	*RN1/4SR 5 6 2 1 F*

Mark	No.	Description	Parts No.
HX UNIT			
SEMICONDUCTORS			
	IC601	DOLBY HX PRO IC	UPC1297CA
	Q601, Q602	TRANSISTOR	2SA1309A
	Q603	TRANSISTOR	DTC124ES
	D601, D602	DIODE	1SS254
COILS			
	L601, L602	COIL	RTD1046
CAPACITORS			
	C601, C602	AUDIO FILM CAPACITOR	CFTXA103J50
	C603, C604	AXIAL CERAMIC CAPACITOR	CKPUYB821K50
	C605, C606	AUDIO FILM CAPACITOR	CFTXA223J50
	C607, C608	CERAMIC CAPACITOR	CGCYX473K25
	C609, C610	CERAMIC CAPACITOR	CCCSL101K500
	C611, C612	CERAMIC CAPACITOR (430P, 500V)	RCG1005
	C613	AXIAL CERAMIC CAPACITOR	CKPUYB101K50
	C614	ELECTR. CAPACITOR	CEASR10M50
	C615	ELECTR. CAPACITOR	CEAS100M50
	C616	ELECTR. CAPACITOR	CEAS4R7M50
	C617	ELECTR. CAPACITOR	CEAS100M50
RESISTORS			
	VR601, VR602	SEMI-FIXED (22KB)	VRTB6HS223
	OTHER RESISTORS		RD1/6PM□□□J
HEADPHONE UNIT			
CAPACITOR			
	C1611	CERAMIC CAPACITOR	CKCYF473Z50
RESISTORS			
	OTHER RESISTORS		RD1/6PM□□□J
OTHER			
	JA1601	HEADPHONE JACK	RKN1002
TIMER SW. UNIT			
SWITCH			
	S401	SLIDE SWITCH (1-3) (REC-OFF-PLAY/REPEAT)	RSH1014

Mark	No.	Description	Parts No.
POWER SW. UNIT			
CAPACITOR			
⚠	C1501	ELECTR. CAPACITOR (0.01μF)	RCG-009
SWITCH			
⚠	S1501	POWER SWITCH	RSA-063
DISPLAY UNIT			
SEMICONDUCTORS			
	Q2401	TRANSISTOR	2SA1309A
	Q2402	TRANSISTOR	DTC114ES
	Q2403	TRANSISTOR	DTA124ES
	Q2404	TRANSISTOR	DTC114ES
	Q2405	TRANSISTOR	DTA124ES
	Q2406	TRANSISTOR	2SA1309A
	D2401-D2406	DIODE	1SS254
RESISTORS			
	OTHER RESISTORS		RD1/6PM□□□J
SWITCHES			
	S2401, S2402	PUSH SWITCH (DOLBY NR ON-OFF, DOLBY NR B-C)	RSG-150
	S2403	PUSH SWITCH (CD SYNCHRO)	RSG1027
	S2404, S2405	TACT SWITCH (AUTO BLE, METER RANGE)	RSG1021
OTHER			
	V2401	FL TUBE	RAW1053
CONTROL SW. UNIT			
SEMICONDUCTORS			
	D2101-D2110	DIODE	1SS254
SWITCHES			
	S2101-S2108	TACT SWITCH (REW, STOP, PLAY, FF, REC, PAUSE, MUTE, COUNT/RESET)	RSG-155
	S2109, S2110	TACT SWITCH (COUNTER/MODE, BLANK/SEARCH)	RSG-143

Mark	No.	Description	Parts No.
VOLUME UNIT			
RESISTORS			
	VR2401	(5KA)	RCV1050
	VR2402	(5KB)	RCS1019
	VR2404	(500ΩB)	RCV1049
	OTHER RESISTORS		RD1/6PM□□□J
REGULATOR IC UNIT			
SEMICONDUCTORS			
	IC1202	REGULATOR IC	TA7812S
CAPACITOR			
⚠	C1207	AXIAL CERAMIC CAPACITOR	CFTXA104J50
TRANSFORMER 1 UNIT			
There is no supply part in this UNIT.			
TRANSFORMER 2 UNIT			
There is no supply part in this UNIT.			
MAIN UNIT			
SEMICONDUCTORS			
	IC101	OP-AMP IC	M5220L
	IC201	DOLBY-B/C IC	CXA1330S
	IC202, IC203	OP-AMP IC	M5218L
	IC301	REC-EQ AMP IC	CXA1198AP-A
	IC401	U-COM IC	PD4265A
	IC431	OP-AMP IC	M5218L
	IC442	LOGIC IC	TC4066BP
	IC501	OP-AMP IC	M5218L
	IC502	LOG-COMPRESS-AMP IC	BA6138
	IC503	CMOS LOGIC IC	TC4050BP
	IC504	DUAL-COMPARATER IC	M5233L
	IC901	IC	BA6218
⚠	IC1201	REGULATOR IC	NJM7812FA
⚠	IC1301	REGULATOR IC	NJM78M05FA
⚠	IC1302	REGULATOR IC	NJM79L12A
⚠	IC1303	REGULATOR IC	NJM79L05A
	IC1601	OP-AMP IC	M5218L
	Q101, Q102	TRANSISTOR	2SC3311A
	Q103, Q104	TRANSISTOR	DTC114ES
	Q105	TRANSISTOR	DTC124ES
	Q121, Q122	N-FET	2SK373
	Q123	TRANSISTOR	DTA124ES
	Q124	TRANSISTOR	DTC124ES
	Q201, Q202	TRANSISTOR	2SD1302
	Q203	TRANSISTOR	DTC114TS
	Q204	TRANSISTOR	DTA124ES
	Q205	TRANSISTOR	DTC114TS
	Q206	TRANSISTOR	DTC124ES
	Q211, Q212	TRANSISTOR	2SD1302
	Q301, Q302	TRANSISTOR	2SC3311A
	Q303-Q307	TRANSISTOR	DTC114ES
	Q361-Q374	TRANSISTOR	DTC114ES
	Q401	TRANSISTOR	DTC114ES
	Q402, Q403	TRANSISTOR	2SA1309A
	Q441	TRANSISTOR	DTC114ES
	Q501, Q502	TRANSISTOR	DTC114TS
	Q701	TRANSISTOR	2SA1309A
	Q702, Q703	TRANSISTOR	2SC3311A
	Q704	TRANSISTOR	2SA1309A
	Q801-Q803	TRANSISTOR	2SC3243
	Q851, Q852	TRANSISTOR	2SA1283
	Q853, Q854	TRANSISTOR	2SC3311A
	Q901	TRANSISTOR	2SC3246
	Q902	TRANSISTOR	2SC3311A
	Q905-Q907	TRANSISTOR	2SC3246
	Q908	TRANSISTOR	2SC3311A
	Q1302	TRANSISTOR	2SA1283
	Q1601, Q1602	TRANSISTOR	2SD1302
	D121-D130	DIODE	1SS254
	D201, D202	DIODE	1SS254
	D401	ZENER DIODE	MTZJ4.3B
	D402-D410	DIODE	1SS254
	D414	ZENER DIODE	MTZJ9.1A
	D501-D505	DIODE	1SS254
	D701	DIODE	1SS254
	D851	DIODE	1SS254
	D852	DIODE	1SS252
	D853-D856	DIODE	1SS254
	D901	DIODE	1SS252
	D902, D903	DIODE	1SS254
	D1203, D1204	DIODE	1SS254
⚠	D1211-D1214	DIODE	1SR35-100A
⚠	D1302	DIODE	1SR35-100A
⚠	D1303	DIODE	1SS252
⚠	D1304	ZENER DIODE	MTZJ20A
⚠	D1305	ZENER DIODE	MTZJ9.1A
COILS AND FILTERS			
	L301, L302	COIL	RTF1102
	L801	COIL	LRA121K
	L802	COIL	RTD1054
	F201, F202	MPX FILTER	RTF1062
CAPACITORS			
	C101, C102	PP CAPACITOR	CQSA821J50
	C103, C104	ELECTR. CAPACITOR	CEANL100M16
	C105, C106	AXIAL CERAMIC CAPACITOR	CKPUYB101K50
	C107, C108	ELECTR. CAPACITOR	CEANL101M10
	C109, C110	AUDIO FILM CAPACITOR	CFTXA223J50
	C111, C112	ELECTR. CAPACITOR	CEAS100M50
	C113, C114	AUDIO FILM CAPACITOR	CFTXA223J50
	C115, C116	AXIAL CERAMIC CAPACITOR	CKPUYB102K50
	C117	ELECTR. CAPACITOR	CEAS101M25
	C118	CERAMIC CAPACITOR	CKCYF103Z50
	C119	ELECTR. CAPACITOR	CEAS470M16
	C121, C122	AXIAL CERAMIC CAPACITOR	CCPUSL100J50
	C201-C204	ELECTR. CAPACITOR	CEAS010M50
	C205-C208	ELECTR. CAPACITOR	CEAS100M50
	C209, C210	ELECTR. CAPACITOR	CEAS4R7M50
	C211-C214	AUDIO FILM CAPACITOR	CFTXA222J50
	C215, C216	ELECTR. CAPACITOR	CEASR22M50
	C217, C218	ELECTR. CAPACITOR	CEASR33M50
	C219, C220	ELECTR. CAPACITOR	CEAS330M16
	C221	ELECTR. CAPACITOR	CEAS100M50

Mark	No.	Description	Parts No.
	C222	AXIAL CERAMIC CAPACITOR	CKPUYY103M16
	C223, C224	ELECTR. CAPACITOR	CEASR33M50
	C227	ELECTR. CAPACITOR	CEAS101M25
	C229, C230	ELECTR. CAPACITOR	CEAS100M50
	C231, C232	CERAMIC CAPACITOR	CKCYF473Z50
	C241, C242	AXIAL CERAMIC CAPACITOR	CKPUYB681K50
	C243, C244	ELECTR. CAPACITOR	CEAS010M50
	C245, C246	AXIAL CERAMIC CAPACITOR	CKPUYB101K50
	C247, C248	ELECTR. CAPACITOR	CEAS010M50
	C249, C250	ELECTR. CAPACITOR	CEAS100M50
	C255, C256	ELECTR. CAPACITOR	CEAS100M50
	C257, C258	AXIAL CERAMIC CAPACITOR	CKPUYB101K50
	C259, C260	ELECTR. CAPACITOR	CEAS100M50
	C261	ELECTR. CAPACITOR	CEAS470M16
	C263, C264	AXIAL CERAMIC CAPACITOR	CKPUYB101K50
	C301, C302	AXIAL CERAMIC CAPACITOR	CKPUYB221K50
	C303, C304	ELECTR. CAPACITOR	CEAS4R7M50
	C305, C306	ELECTR. CAPACITOR	CEAS101M25
	C307, C308	ELECTR. CAPACITOR	CEAS010M50
	C309	ELECTR. CAPACITOR	CEAS101M25
	C310	CERAMIC CAPACITOR	CKCYF103Z50
	C312	CERAMIC CAPACITOR	CKCYF473Z50
	C313, C314	ELECTR. CAPACITOR	CEAS4R7M50
	C401	CERAMIC CAPACITOR	CKCYF103Z50
	C402	ELECTR. CAPACITOR	CEAS470M16
	C403-C406	CERAMIC CAPACITOR	CKCYF103Z50
	C407	CERAMIC CAPACITOR	CKCYF473Z50
	C431	AUDIO FILM CAPACITOR	CFTXA223J50
	C432	AUDIO FILM CAPACITOR	CFTXA222J50
	C433, C434	ELECTR. CAPACITOR	CEAS010M50
	C435	CERAMIC CAPACITOR	CGCYX104K25
	C436	AUDIO FILM CAPACITOR	CFTXA103J50
	C501, C502	CERAMIC CAPACITOR	CGCYX104K25
	C503, C504	AXIAL CERAMIC CAPACITOR	CKPUYB102K50
	C505-C508	ELECTR. CAPACITOR	CEAS4R7M50
	C509	CERAMIC CAPACITOR	CKCYF473Z50
	C511, C512	ELECTR. CAPACITOR	CEAS4R7M50
	C701	ELECTR. CAPACITOR	CEAS4R7M50
	C702	ELECTR. CAPACITOR	CEAS470M16
	C804	AUDIO FILM CAPACITOR	CFTXA273J50
	C805	CERAMIC CAPACITOR	CGCYX682K25
	C806, C807	CERAMIC CAPACITOR	CGCYX332K25
	C808	ELECTR. CAPACITOR	CEAS470M16
	C811	PP CAPACITOR	CQPA682J100
	C851, C852	ELECTR. CAPACITOR	CEAS470M16
	C901	CERAMIC CAPACITOR	CGCYX104K25
	C905	AXIAL CERAMIC CAPACITOR	CKPUYY103M16
	C1201, C1202	CERAMIC CAPACITOR	CKCYF473Z50
	C1203	ELECTR. CAPACITOR	CEAS332M35
	C1204	ELECTR. CAPACITOR	CEAS331M16
	C1205	CERAMIC CAPACITOR	CKCYF103Z50
	C1206	ELECTR. CAPACITOR	CEAS331M16
	C1301	ELECTR. CAPACITOR	CEAS332M16
	C1303	ELECTR. CAPACITOR	CEAS331M16
	C1305	CERAMIC CAPACITOR	CKCYF103Z50
	C1306	ELECTR. CAPACITOR	CEAS101M50
	C1309	ELECTR. CAPACITOR	CEAS101M50
	C1310	ELECTR. CAPACITOR	CEAS470M16
	C1311-C1313	CERAMIC CAPACITOR	CKCYF473Z50
	C1601, C1602	ELECTR. CAPACITOR	CEASR10M50
	C1603, C1604	ELECTR. CAPACITOR	CEAS010M50
	C1605, C1606	ELECTR. CAPACITOR	CEAS101M25
	C1610	ELECTR. CAPACITOR	CEAS331M16

RESISTORS

	VR101, VR102	SEMI-FIXED VR (22KB)	VRTB6VS223
	VR301, VR302	SEMI-FIXED VR (22KB)	VRTB6VS223
	VR431, VR432	SEMI-FIXED VR (22KB)	VRTB6VS223
	VR501, VR502	SEMI-FIXED VR (10KB)	VRTB6VS103
	R401	RESISTOR ARRAY	RA4T683J
	R402	RESISTOR ARRAY	RA8T683J
	R404	RESISTOR ARRAY	RA10T223J
	R515	RESISTOR ARRAY	RA5T223J
	R516	LADDER RESISTOR (11K)	RCX1020
	R813	CARBON RESISTOR	RD1/2LF010J
	R851	CARBON RESISTOR	RD1/2LF431J
	R852	CARBON RESISTOR	RD1/2LF221J
	R914	METAL OXIDE	RS2LMF390J
⚠	R1308	FUSIBLE RESISTOR	RFA1/4L4R7J
	R1620	METAL OXIDE	RS2LMF750J
	OTHER RESISTORS		RD1/6PM□□□J

OTHERS

	CN406	CONNECTOR (5P)	KPC5
	JA201	JACK (4P)	RKB1001
	JA203, JA204	MIC JACK	RKN1003
	JA401	MINI JACK	RKN1014
	JA402, JA403	REMOTE CONTROL JACK	RKN1004
	X401	CERAMIC RESONATOR	VSS1014

-447

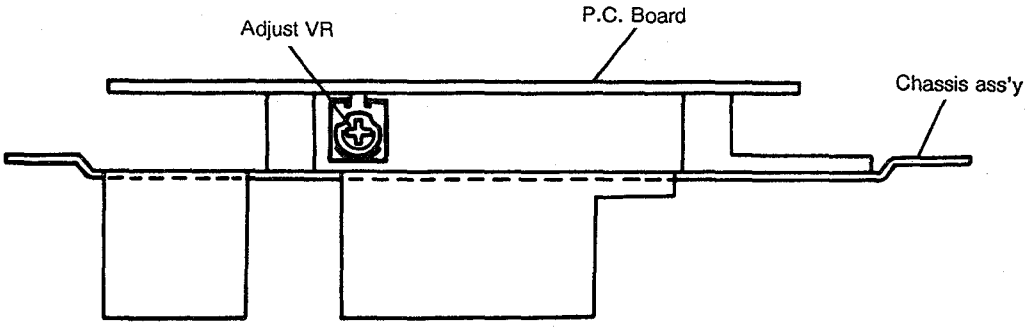
8. ADJUSTMENTS

8.1 MECHANICAL ADJUSTMENT

1. Tape speed adjustment

Mode	Test tape	Adjustment position	Specification rating (playback frequency)
PLAY	Play the STD-301 tape (3kHz)	Variable resistor control	3000Hz ±5Hz

Note: Adjust after one minute of playback.



Mechanism unit diagram, top view

Fig. 8-1

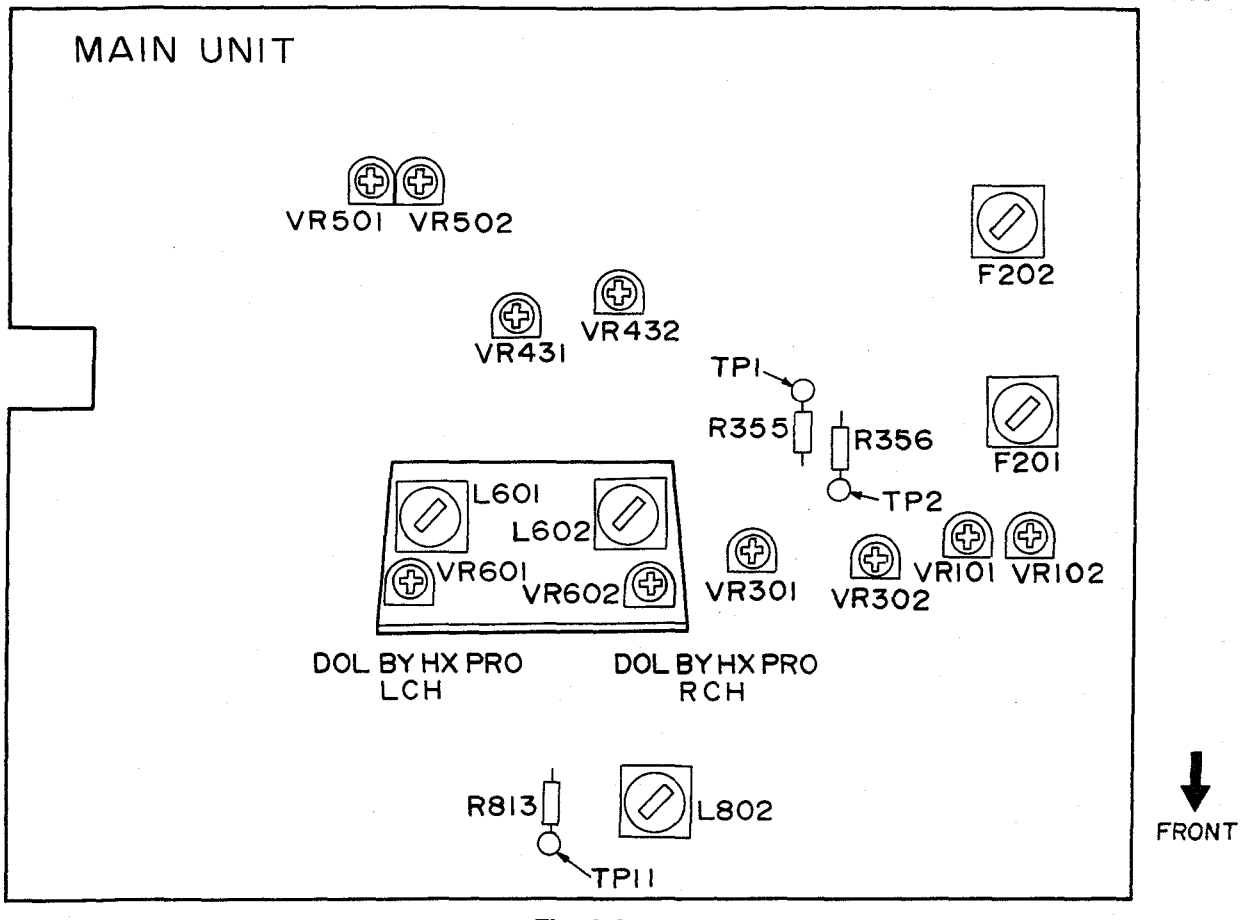


Fig. 8-2

8.2 ELECTRICAL ADJUSTMENTS

Adjustment Conditions

1. The mechanical adjustments must be completed first.
2. The head must be cleaned and demagnetized.
3. Turn power on allow the deck to warm up for at least a few minutes before commencing any electrical adjustments.
4. The reference signal is 0dBv = 1Vrms.
5. Connect a 50 kilo-ohm (or between 47 to 52 kilo-ohm) load resistance to the OUTPUT terminals.
6. Unless otherwise specified, the switches listed below are left in the positions indicated.
   DOLBY NR : OFF
   TAPE SELECTOR : NORM

Test Tapes

STD-331B	:	Playback adjustments (See Fig. 8-3)
STD-630	:	NORMAL blank tape
STD-620	:	CrO_2 blank tape
STD-610	:	METAL blank tape

List of Adjustments

Playback sections

1. Head azimuth adjustment.
2. Playback level adjustment.

Recording sections

1. Bias oscillator adjustment.
2. Recording bias adjustment.
3. Recording level adjustment.
4. Auto BLE and level meter adjustment.

NOTE: This unit has an automatic tape selection feature.

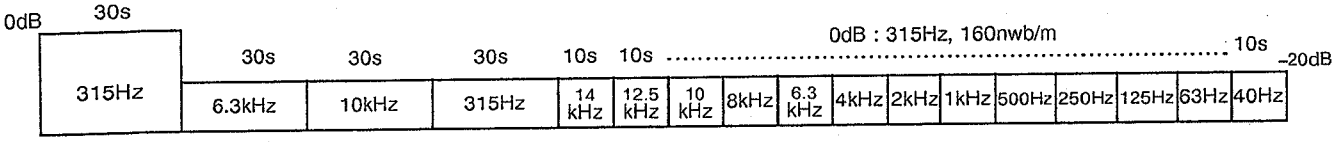


Fig. 8-3 Constants of the test tape STD-331B

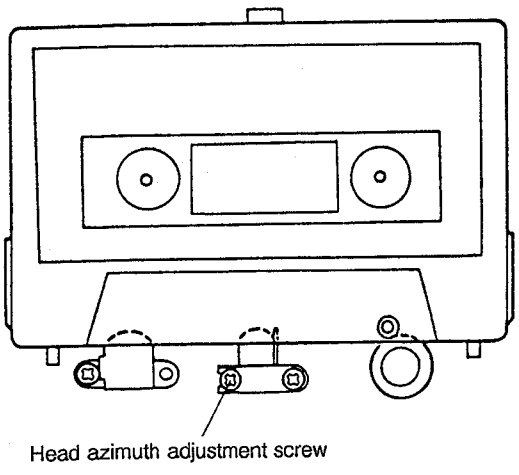


Fig. 8-4 Head azimuth adjustment

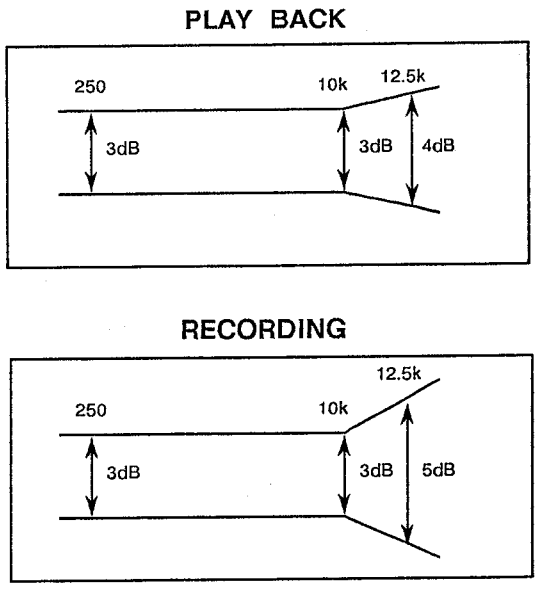


Fig. 8-5 Allowable playback frequency response zone

-447

PLAYBACK SECTION

1. Head Azimuth Adjustment

- Turn VR101, VR102 to mechanical center positions.

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	PLAY	Play the 10kHz/–20dB section of STD-331B test tape.	Head azimuth adjustment screw. (See Fig. 8.4)	LINE OUT	Maximum playback signal level.	
2.	STOP	Lock the screw with screw lock after completing adjustment.				

2. Playback Level Adjustment

- This adjustment determines the DOLBY NR level, and must be performed with great care.

No.	Mode	Input signal & test tape	Adjustment location		Measuring location	Adjustment value	Remarks
1.	PLAY	Play the 315 Hz/0 dB section of STD-331B test tape.	Deck I	VR101 (Lch) VR102 (Rch)	TP1. DOL. L (Lch) TP2. DOL. R (Rch)	–10.7 dBv	

RECORDING SECTION

1. Bias Oscillator Adjustment

- Adjust the bias oscillator with checks set to recording mode simultaneously. (Double R/P only)

No.	Mode	Input signal & test tape	Adjustment location		Measuring location	Adjustment value	Remarks
1.	REC	Load the STD-610 test tape with no input signal.	Deck I	L802	TP. 11	105 kHz ±0.3 kHz	

2. Recording Bias Adjustment

- After the adjustment, caution should be exercised so as not to become under bias by checking the distortion rate.

No.	Mode	Input signal & test tape	Adjustment location		Measuring location	Adjustment value	Remarks
1.	STOP	Set the TAPE SELECTOR switch to the NORM position.					
2.	REC	Record the 315 Hz and 6.3 kHz signals at –20 dBv input level and playback.	Deck I	VR601 (Lch) VR602 (Rch)	LINE OUT	Repeatedly record, playback and adjust so that the playback level of 6.3 kHz signal becomes +0.5 dB ±0.5 dB when compared with the 315 Hz signal.	

3. Recording Level Adjustment

No.	Mode	Input signal & test tape	Adjustment location		Measuring location	Adjustment value	Remarks
1.	STOP	Set the TAPE SELECTOR switch to the NORM position.					
2.	REC PAUSE	Apply a 315Hz/0dBv signal to the line input terminals, load the STD-630 test tape.	Rec Level control volume		TP. 1 DOL. L (Lch) TP. 2 DOL. R (Rch)	−11.2 dBv	
3.	STOP	Set the DOLBY NR switch to the ON position. (DOLBY B)					
4.	REC/ PLAY	Record the above signal onto the STD-630 test tape, and playback.	Deck I	VR301 (Lch) VR302 (Rch)	TP. 1 DOL. L (Lch) TP. 2 DOL. R (Rch)	Repeatedly record, playback and adjust so that the playback signal level becomes −11.2dB.	
5.	STOP	Set the TAPE SELECTOR switch to the CrO_2 position.					
6.	REC/ PLAY	Record the above signal onto the STD-620 test tape, and playback.	Check		TP. 1 DOL. L (Lch) TP. 2 DOL. R (Rch)	−11.2 dBv ± 1.5dB	
7.	STOP	Set the TAPE SELECTOR switch to the METAL position.					
8.	REC/ PLAY	Record the above signal onto the STD-610 test tape, and playback.	Check		TP. 1 DOL. L (Lch) TP. 2 DOL. R (Rch)	−11.2 dBv ± 1.5dB	

4. Auto BLE and Level Meter adjustment

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	Select test mode by short-circuiting between JP-401 and JP-402. (Instantly)					
2	REW	(TEST 1: 400 Hz)	VR431	LINE OUT (Lch)	−19.5 dBV	*NOTE
			VR501	LEVEL METER	Adjust so that the segment of −10dB will blink.	
			VR431	LINE OUT (Rch)	−19.5 dBV	
			VR502	LEVEL METER	Adjust so that the segment of −10dB will blink.	
3	STOP	(TEST 2: 10 kHz)	VR432	LEVEL METER	Adjust so that the segment of −10dB of channel R will blink.	

*NOTE
- Instantly shorted between jp401 and 402, it returns to test mode.
- To clear the test mode, push the AUTO BLE switch, or turn the power OFF.
- Adjustment of No. 2 should proceed in turns of above to down items.

8. RÉGLAGE

8.1 RÉGLAGES MÉCANIQUES

1. Réglage de la vitesse de défilement de la bande

Mode	Bande d'étalonnage	Position de réglage	Spécifications nominales (fréquence de lecture)
LECTURE	Lire la bande STD-301 (3kHz)	Contrôle à résistance variable	3000Hz ±5Hz

Remarque: Ajuster après une minute de lecture.

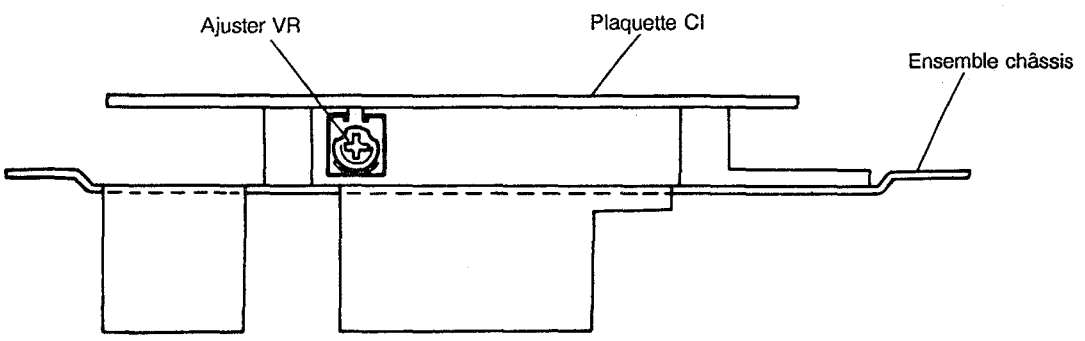


Diagramme de l'unité du mécanisme, vue de haut

Fig. 8-1

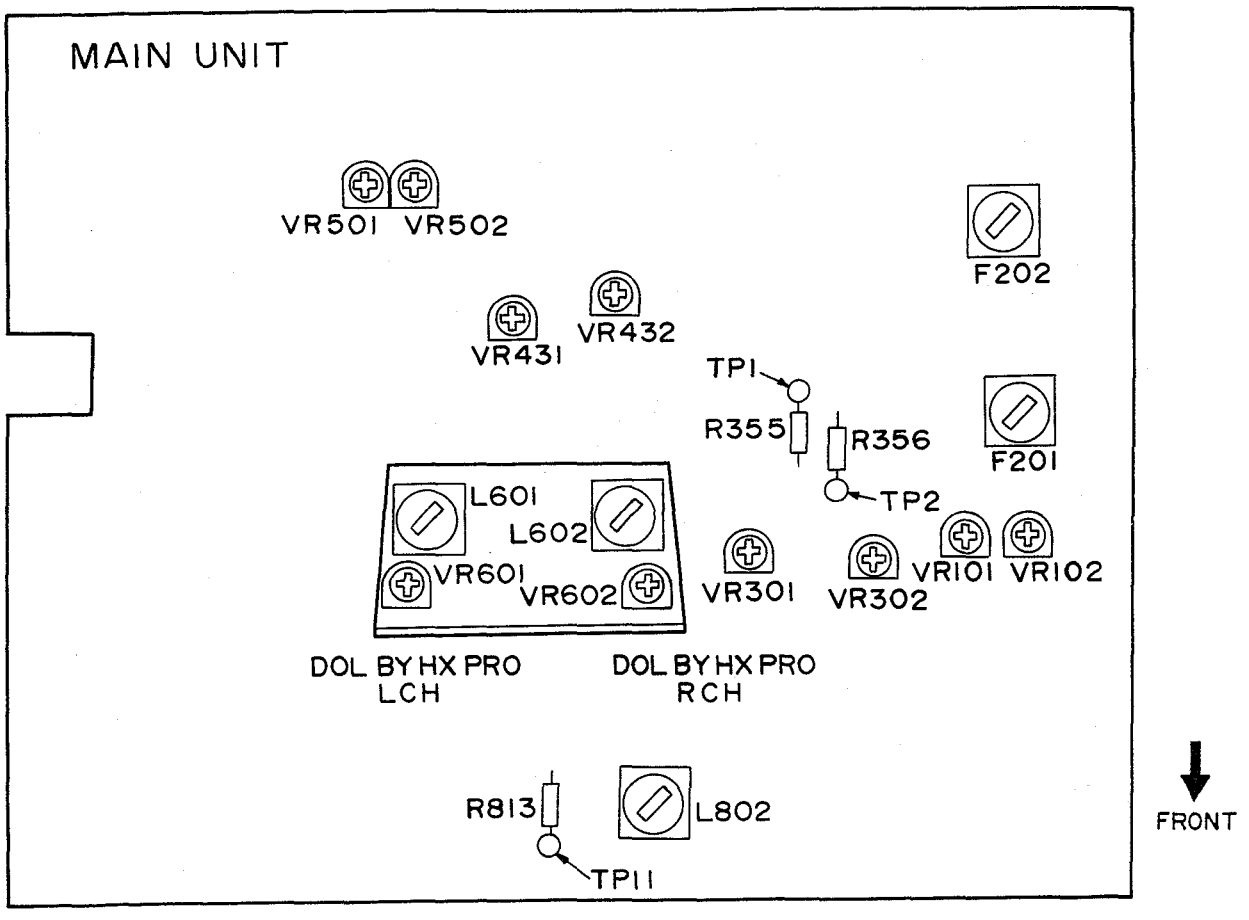


Fig. 8-2

8.2 REGLAGES ELECTRIQUES

Conditions de réglage

1. Les réglages mécaniques doivent tout d'abord être terminés.
2. Les têtes doivent être nettoyées et démagnétisées.
3. Mettre la platine sous tension et la laisser chauffer pendant au moins quelques minutes avant de commencer les réglages électriques.
4. Le signal de référence est de dBv = 1 Vrms.
5. Connecter une résistance de charge de 50 kohms (tolérance 47 à 52 kohms) aux bornes de sortie (OUTPUT).
6. Sauf indication contraire, les commutateurs ci-dessous doivent être laissés sur les positions indiquées.
   DOLBY NR : OFF
   Sélecteur de bande : NORM
   (TAPE SELECTOR)

Bandes d'essai

STD-331B	:	Réglages de la lecture (Voir fig. 8-3)
STD-630	:	Bande vierge de type normal
STD-620	:	Bande vierge de type chrome
STD-610	:	Bande vierge de type métal

Liste des réglages

Sections de lecture

1. Réglage de l'azimut de la tête.
2. Réglage du niveau de lecture.

Sections d'enregistrement

1. Réglage de l'oscillateur de polarisation.
2. Réglage de la polarisation d'enregistrement.
3. Réglage du niveau d'enregistrement.
4. Réglage du décibelmètre et d'Auto BLE.

REMARQUE:
Cette unité est detée d'une selection automatique de bande.

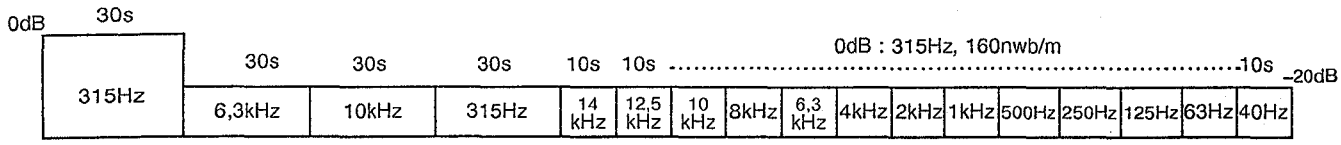


Fig. 8-3 Constantes de la bande d'essai STD-331B

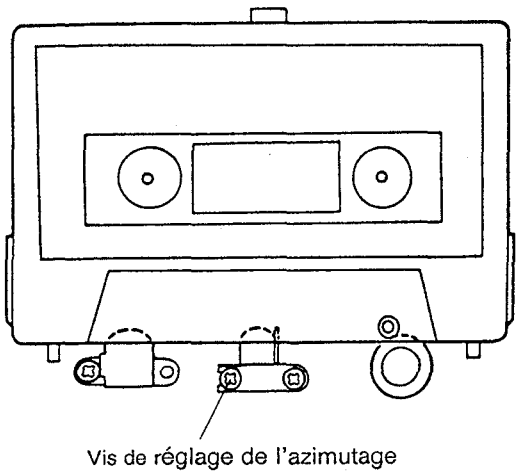


Fig. 8-4 Réglage de l'azimut de la tête

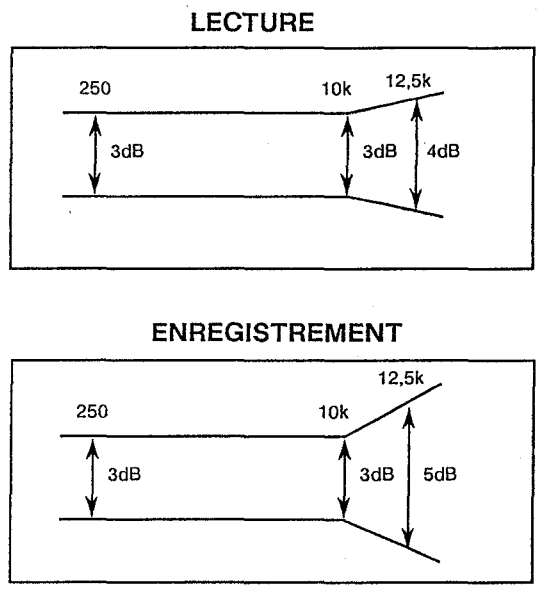


Fig. 8-5 Tolérance de la zone de réponse en fréquence de lecture

T-447

SECTION DE LECTURE

1. Réglage de l'azimut de la tête

- Tourner VR101, VR102 sur leur position centrale mécanique.

No.	Mode	Signal d'entrée et bande d'essai	Points de réglage	Points de mesure	Valeur de réglage	Remarques
1.	PLAY	Reproduire la section 10 kHz/–20 dB de la bande d'essai STD-331B.	Vis de réglage de l'azimut de la tâte. (Voir fig. 8-4)	Sortie de ligne (LINE OUT)	Niveau du signal de reproduction maximum.	
2.	STOP	Verrouiller la vis avec le verrouillage de vis après avoir terminé le réglage.				

2. Réglage du niveau de lecture

- Ce réglage détermine le niveau DOLBY NR et il doit être effectué très soigneusement.

No.	Mode	Signal d'entrée et bande d'essai	Points de réglage		Points de mesure	Valeur de réglage	Remarques
1.	PLAY	Reproduir la section 315Hz/0dB de la bande déssai STD-331B.	Platine I	VR101(can. G) VR102(can. D)	TP. 1 DOL. L (can. G) TP. 2 DOL. R (can. D)	–10.7 dBv	

SECTION D'ENREGISTREMENT

1. Réglage de l'oscillateur de polarisation

- Régler l'oscillateur de polarisation, les platines étant réglées simultanément dons lemode d'enregistrement (Enr/lec double soulenent)

No.	Mode	Signal d'entrée et bande d'essai	Points de réglage		Points de mesure	Valeur de réglage	Remarques
1.	REC	Charger la bande d'essai STD-610 et n'introduire aucun signal.	Platine I	L802	TP. 11	105 kHz ± 0.3 kHz	

2. Réglage de la polarisation d'enregistrement

- Après le réglage, des précautions doivent être prises pour éviter une sous-polarisation en vérifiant le taux de distorsion.

No.	Mode	Signal d'entrée et bande d'essai	Points de réglage		Points de mesure	Valeur de réglage	Remarques
1.	STOP	Régler le sélecteur de bande (TAPE SELECTOR) sur la position NORM.					
2.	REC	Enregistrer les signaux 315 Hz et 6.3 kHz à un niveau d'entrée de –20 dBv et les reproduire.	Platine I	VR601(can. G) VR602(can. D)	Sortie de ligne (LINE OUT)	Enregistrer, reproduire et régler de manière répétée de sorte que le niveau de lecture du signal 6.3 kHz devienne +0.5dB ±0.5dB lorsqu'il est comparé avec le signal 315 Hz.	

3. Réglage du niveau d'enregistrement

No.	Mode	Signal d'entrée et bande d'essai	Points de réglage		Points de mesure	Valeur de réglage	Remarques
1.	STOP	Régler le sélecteur de bande (TAPE SELECTOR) sur la position NORM.					
2.	REC PAUSE	Appliquer un signal de 315 Hz/0 dBv aux bornes d'entrée de ligne, charger la bande d'essai STD-630.	Volume de la commande de niveau d'enregistrement.		TP. 1 DOL. L (can.G) TP. 2 DOL. R (can.D)	−11.2 dBv	
3.	STOP	Régler le commutateur DOLBY NR sur la position ON. (DOLBY B)					
4.	REC/ PLAY	Enregistrer le signal cidessus sur la bande d'essai STD-630 et le reproduire.	Platine I	VR301(can.G) VR302(can.D)	TP. 1 DOL. L (can. G) TP. 2 DOL. R(can. D)	Enregistrer, reproduire et régler de manière répétée de sorte que le niveau du signal devienne −11.2dB.	
5.	STOP	Régler le sélecteur de bande (TAPE SELECTOR) sur la position CrO_2.					
6.	REC/ PLAY	Enregistrer le signal cidessus sur la bande d'essai STD-620 et le reproduire.	Vérifier		TP. 1 DOL. L (can. G) TP. 2 DOL.R (can. D)	−11.2 dBv ± 1.5dB	
7.	STOP	Régler le sélecteur de bande (TAPE SELECTOR) sur la position METAL.					
8.	REC/ PLAY	Enregistrer le signal cidessus sur la bande d'essai STD-610 et le reproduire.	Vérifier		TP. 1 DOL. L (can. G) TP. 2 DOL. R(can.D)	−11.2 dBv ± 1.5dB	

4. Réglage de BLE automatique et de l'indicateur de niveau

No.	Mode	Signal d'entrée et bande d'essai	Points de réglage	Points de mesure	Valeur de réglage	Remarques
1	Sélectionner le mode d'essai en court-circuitant JP-401 et JP-402. (Immédiatement)					
2	REW	(Rembobinage) (TEST 1 : 400Hz)	VR431	Sortie de ligne (Lch) (Can. G)	−19.5 dBV	*Remarque
			VR501	Indicateur de niveau	Régler de sorte que le segment de −10 dB clignote.	
			VR431	Sortie de ligne (Rch) (Can. D)	−19.5 dBV	
			VR502	Indicateur de niveau	Régler de sorte que le segment de −10 dB clignote.	
3	STOP	(Arrêt) (TEST 2 : 10kHz)	VR432	Indicateur de niveau	Régler de sorte que le segment de −10 dB du canal R clignote.	

*Remarque
- Immédiatement court-circuité entre JP401 et 402, le réglage revient sur le mode de test.
- Pour annuler le mode de test, appuyer sur AUTO BLE ou mettre l'appareil hors tension (OFF).
- Le réglage du n° 2 doit être effectué dans l'ordre des éléments de haut en bas.

8. AJUSTE

8.1 AJUSTE MECANICO

1. Ajuste de la velocidad de la cinta

Modo	Cinta de prueba	Posición de ajuste	Valor de especificación (frecuencis de reproducción)
PLAY	Reproducir la STD-301 (3kHz)	Control del resistor variable	3000Hz ±5Hz

Nota: Ajustar la resistencia variable

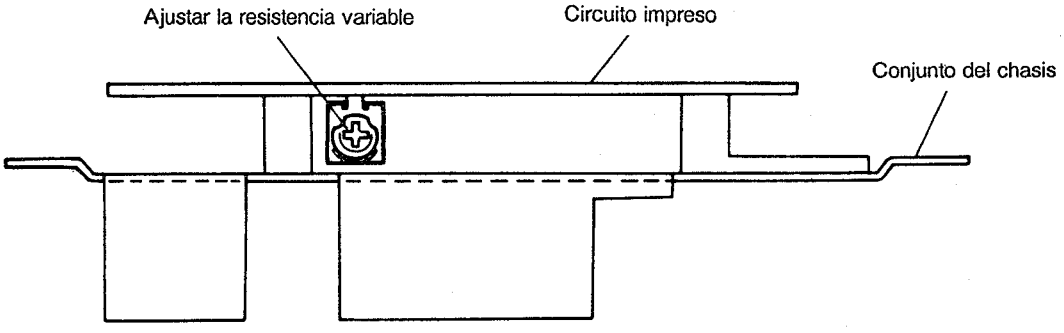


Diagrama del mecanismo, vista de arriba

Fig. 8-1

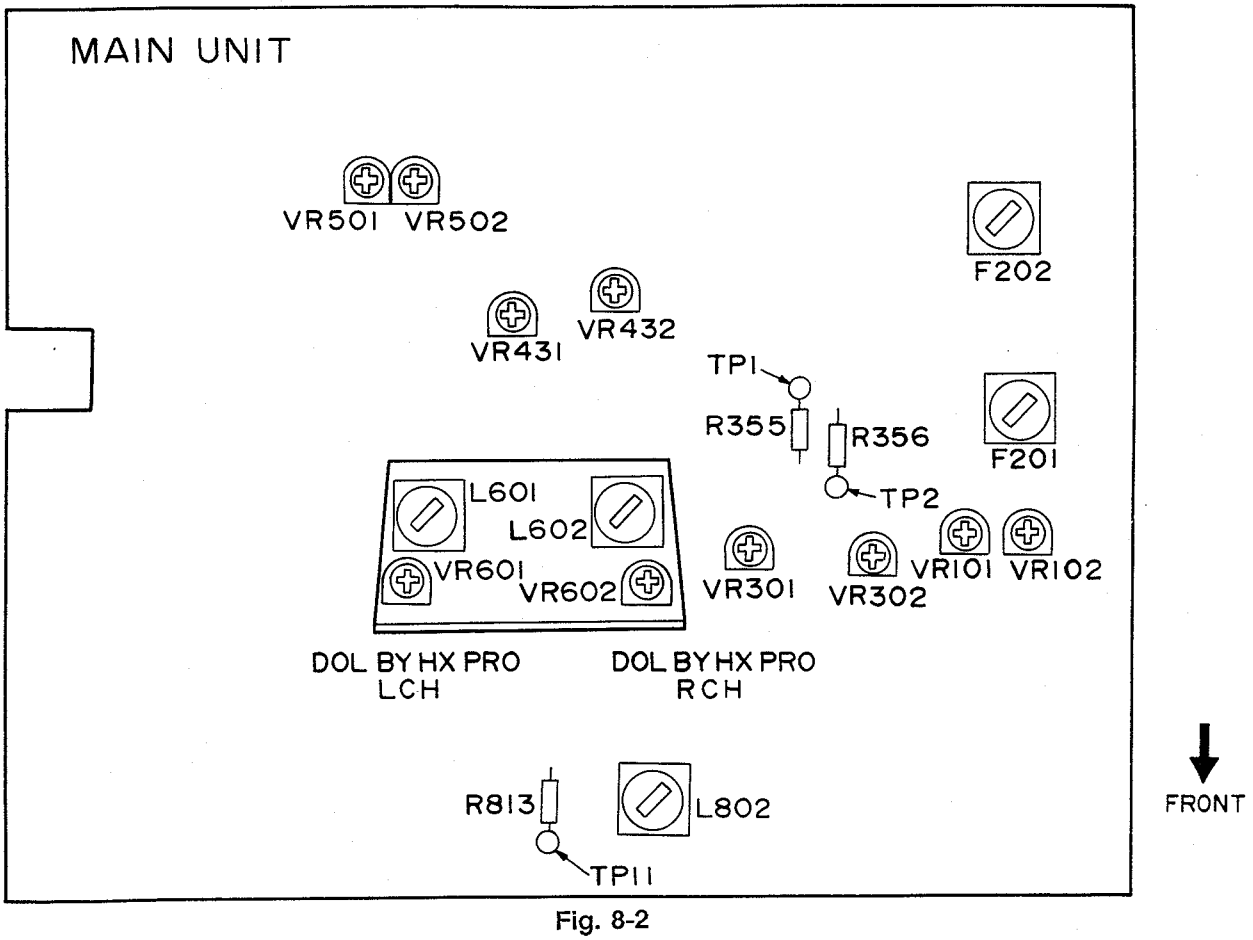


Fig. 8-2

8.2 AJUSTES ELÉCTRICOS

Condiciones de ajuste

1. Los ajustes mecánicos deben haberse completado primero.
2. La cabeza debe estar limpia y desmagnetizada.
3. Encienda la alimentación para permitir que la platina se caliente durante unos pocos minutos por lo menos antes de realizar cualquier ajuste eléctrico.
4. La señal de referencia es de 0 dBv = 1 Vrms.
5. Conecte una resistencia de 50 kΩ (o entre 47 y 52 kΩ) en los terminales OUTPUT.
6. A menos que se especifique lo contrario, los conmutadores indicados más abajo deben dejarse en las posiciones indicadas.
   DOLBY NR : OFF
   (TAPE SELECTOR) : NORM

Cintas de prueba

STD-331B : Ajustes de reproducción (Consulte la figura 8-3)
STD-630 : Cinta virgen NORMAL
STD-620 : Cinta virgen de CrO_2
STD-610 : Cinta virgen de METAL

Lista de ajustes

Secciones de reproducción

1. Ajuste de azimut de la cabeza
2. Ajuste del nivel de reproducción

Secciones de grabación

1. Ajuste del oscillador de polarización
2. Ajuste de la polarización de grabación
3. Ajuste del nivel de grabación
4. Auto BLE y ajuste del medidor de nivel

NOTA:
Esta unidad posee una fanción de selección automática de cinta.

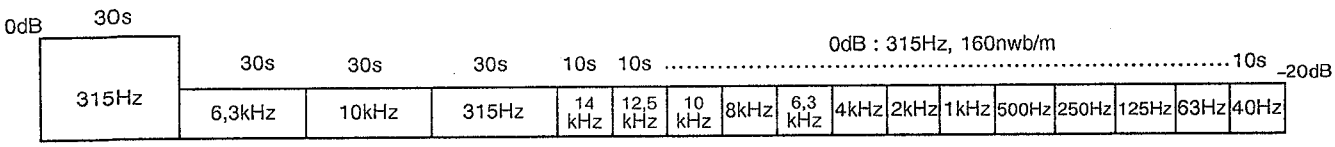


Figura 8-3 Constantes de la cinta de prueba STD-331B

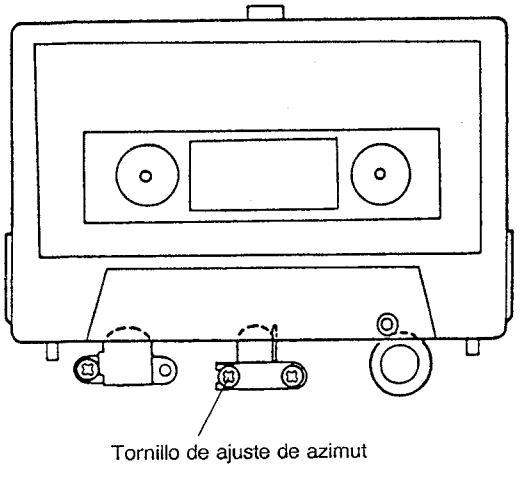


Figura 8-4 Ajuste de azimut de la cabeza

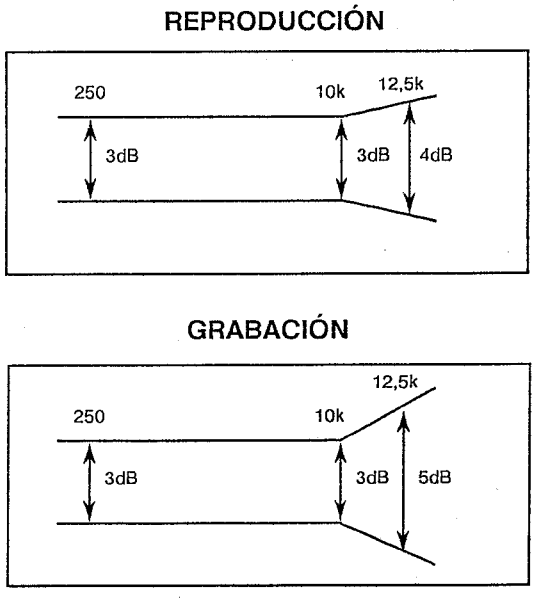


Figura 8-5 Zona permisible de respuesta de frecuencia de reproducción

SECCIÓN DE REPRODUCCIÓN

1. Ajuste del azimut de la cabeza

- Poner VR101, VR102 en las posiciones del centro mecánico.

Nº	Modo	Señal de entrada y cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Comentarios
1.	PLAY	Reproduzca la sección de 10 kHz/–20 dB de la cinta de prueba STD-331B.	Tornillo de ajuste del azimut de la cabeza. (Vea la figura 8-4)	LINE OUT	Nivel máximo de la señal de reproducción.	
2.	STOP	Bloquee el tornillo con su cierre una vez finalizado el ajuste.				

2. Ajuste del nivel de reproducción

- Este ajuste determina el nivel DOLBY NR y debe realizarse con mucho cuidado.

Nº	Modo	Señal de entrada y cinta de prueba	Punto de ajuste		Punto de medición	Valor de ajuste	Comentarios
1.	PLAY	Produzca la parte de 315 Hz/0 dB de la cinta de prueba STD-331B.	Platina I	VR 101 (Lch) VR 102 (Rch)	TP1. DOL. L (Lch) TP2. DOL. R (Rch)	–10.7 dBv	

SECCIÓN DE GRABACIÓN

1. Ajuste del oscilador de polarización

- Ajuste el oscilador de polarización con los platinas pues tas simultánlamente en el mode de grabación. (Doble G/R Sólo)

Nº	Modo	Señal de entrada y cinta de prueba	Punto de ajuste		Punto de medición	Valor de ajuste	Comentarios
1.	REC	Introduzca la cinta de prueba STD-610 sin señal de entrada.	Platina I	L802	TP.11	105 kHz ±0.3 kHz	

2. Ajuste de polarización de grabación

- Una vez finalizado el ajuste, compruebe el porcentaje de distorsión para no obtener subpolarización.

Nº	Modo	Señal de entrada y cinta de prueba	Punto de ajuste		Punto de medición	Valor de ajuste	Comentarios
1.	STOP	Ponga el conmutador TAPE SELECTOR en la posición NORM.					
2.	REC	Grabe la señal de 315 Hz y 6.3 kHz a un nivel de entrada de –20 dBv y reprodúzcala.	Platina I	VR 601 (Lch) VR 602 (Rch)	LINE OUT	Grabe, reproduzca y ajuste repetidamente para que el nivel de la señal de reproducción de 6.3 kHz sea de +0.5dB ±0.5dB cuando se compare con la señal de 315 Hz.	

3. Ajuste del nivel de grabación

Nº	Modo	Señal de entrada y cinta de prueba	Punto de ajuste		Punto de medición	Valor de ajuste	Comentarios
1.	STOP	Ponga el conmutador TAPE SELECTOR en la posición NORM.					
2.	REC PAUSE	Aplique una señal de 315 Hz/0 dBv a los terminales de entrada de línea e introduzca la cinta de prueba STD-630.	Control de nivel de grabación.		TP. 1 DOL. L (Lch) TP. 2 DOL. R (Rch)	−11.2 dBv	
3.	STOP	Ponga el conmutador DOLBY NR en la posición ON. (DOLBY B)					
4.	REC/ PLAY	Grabe la señal de arriba en la cinta de prueba STD-630 y reprodúzcala.	Platina I	VR301 (Lch) VR302 (Rch)	TP. 1 DOL. L (Lch) TP. 2 DOL. R (Rch)	Grabe, reproduzca y ajuste repetidamente para que el nivel de la señal de reproducción sea de −11.2dB.	
5.	STOP	Ponga el conmutador TAPE SELECTOR en la posición CrO_2.					
6.	REC/ PLAY	Grabe la señal de arriba en la cinta de prueba STD-620 y reprodúzcala.	Verifique		TP. 1 DOL. L (Lch) TP. 2 DOL. R (Rch)	−11.2 dBv ± 1.5dB	
7.	STOP	Ponga el conmutador TAPE SELECTOR en la posición METAL.					
8.	REC/ PLAY	Grabe la señal de arriba en la cinta de prueba STD-610 y reprodúzcala.	Verifique		TP. 1 DOL. L (Lch) TP. 2 DOL. R (Rch)	−11.2 dBv ± 1.5dB	

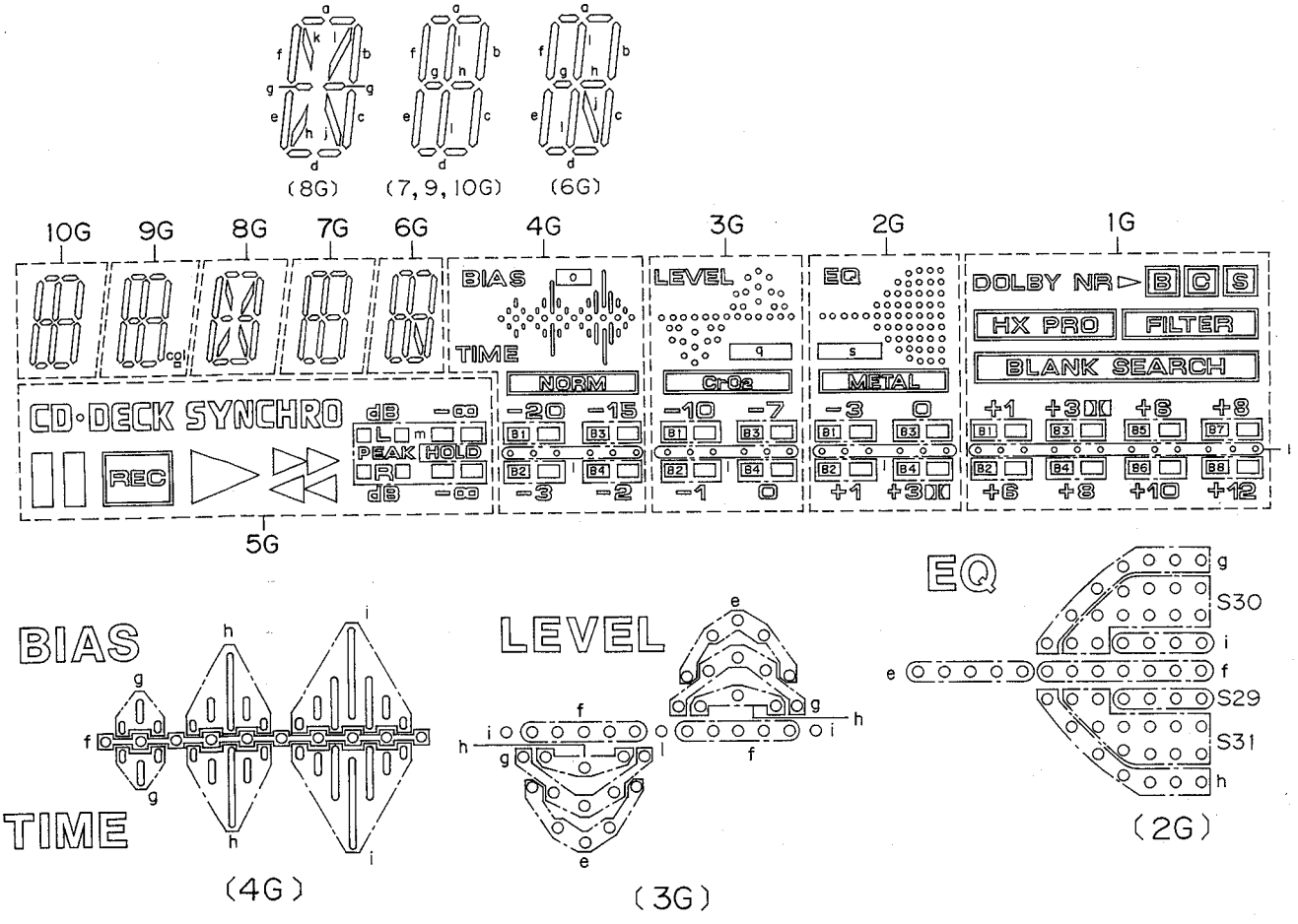
4. Verificación del medidor de nivel

Nº	Modo	Señal de entrada y cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Comentarios
1	Seleccione el modo de prueba poniendo JP-401 y JP-402 en cortocircuito. (Instantáneamente)					
2	REW	(TEST 1: 400Hz)	VR431	LINE OUT (Lch)	−19.5 dBV	*NOTAS
			VR501	LEVEL METER	Ajuste de modo que el segmento de −10 dB destelle intermitentemente.	
			VR431	LINE OUT (Rch)	−19.5 dBV	
			VR502	LEVEL METER	Ajuste de modo que el segmento de −10 dB destelle intermitentemente.	
3	STOP	(TEST 2: 10kHz)	VR432	LEVEL METER	Ajuste de modo que el segmento de −10 dB del canal R destelle intermitentemente.	

*NOTAS
- Cortocircuitando instantáneamente entre JP401 y 402, se pone en el modo de prueba.
- Para cancelar el modo de prueba, presionan ol interruptor AUTO BLE, o desconectar la alimanetación.
- Efectuar el ajuste del No. 2 ordenadamente desde el primer punto.

9. IC INFORMATION

• GRID ASSIGNMENT



• PIN CONNECTION

49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
F 2	F 2	N P	N P	S 12	S 4	S 11	S 10	S 3	S 5	S 7	S 8	S 6	S 2	S 9	S 1	S 13	S 14	S 15	S 16	S 17	S 18	N C	S 29	S 30	S 31	S 23	S 24	S 25	S 26	S 27	S 28	S 19	S 20	S 21	S 22	10 G	9 G	8 G	7 G	6 G	5 G	4 G	3 G	2 G	1 G	N P	F 1	F 1

Note 1) NP ..... No pin.
2) F1, F2 ..... Filament
3) 1G~10G ..... Grid

• ANODE CONNECTION

	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
S1	a	a	a	a	a	▮▮	B1	B1	B1	B1
S2	b	b	b	b	b	REC	B2	B2	B2	B2
S3	c	c	c	c	c	▶	B3	B3	B3	B3
S4	d	d	d	d	d	◀◀	B4	B4	B4	B4
S5	e	e	e	e	e	▶▶	TIME	e	e	B5
S6	f	f	f	f	f	CD	f	f	f	B6
S7	g	g	g	g	g	• DECK	g	g	g	B7
S8	h	h	h	h	h	SYNCHRO	h	h	h	B8
S9	i	i	i	i	i	HOLD	i	i	i	BLANK SEARTH
S10	–	–	j	–	j	dB – ∞ (UP)	–20 –15	–10 –7	–30	+1+3 ◗◖ +6+8
S11	–	col	k	–	–	dB – ∞ (DOWN)	–3 –2	–1 –0	+1+3 ◗◖	+6+8+10+12
S12	–	–	–	–	–	–	●●● ●●●	●●● ●●●	●●● ●●●	●●● ~ ●●●
S13	–	–	–	–	–	m	–	–	–	
S14	–	–	–	–	–	–	BIAS	–	–	–
S15	–	–	–	–	–	–	O	–	–	–
S16	–	–	–	–	–	–	–	LEVEL	–	–
S17	–	–	–	–	–	–	–	q	–	–
S18	–	–	–	–	–	–	–	–	EQ	–
S19	–	–	–	–	–	–	–	–	s	–
S20	–	–	–	–	–	–	NORM	–	–	–
S21	–	–	–	–	–	–	–	CrO_2	–	–
S22	–	–	–	–	–	–	–	–	METAL	–
S23	–	–	–	–	–	–	–	–	–	DOLBY NR ▶
S24	–	–	–	–	–	–	–	–	–	B
S25	–	–	–	–	–	–	–	–	–	C
S26	–	–	–	–	–	–	–	–	–	S
S27	–	–	–	–	–	–	–	–	–	HX PRO
S28	–	–	–	–	–	–	–	–	–	FILTER
S29	–	–	–	–	–	–	–	–	S29	–
S30	–	–	–	–	–	–	–	–	S30	–
S31	–	–	–	–	–	–	–	–	S31	–

10. FOR CT-447/HB AND CT-447-S/HEWM TYPES

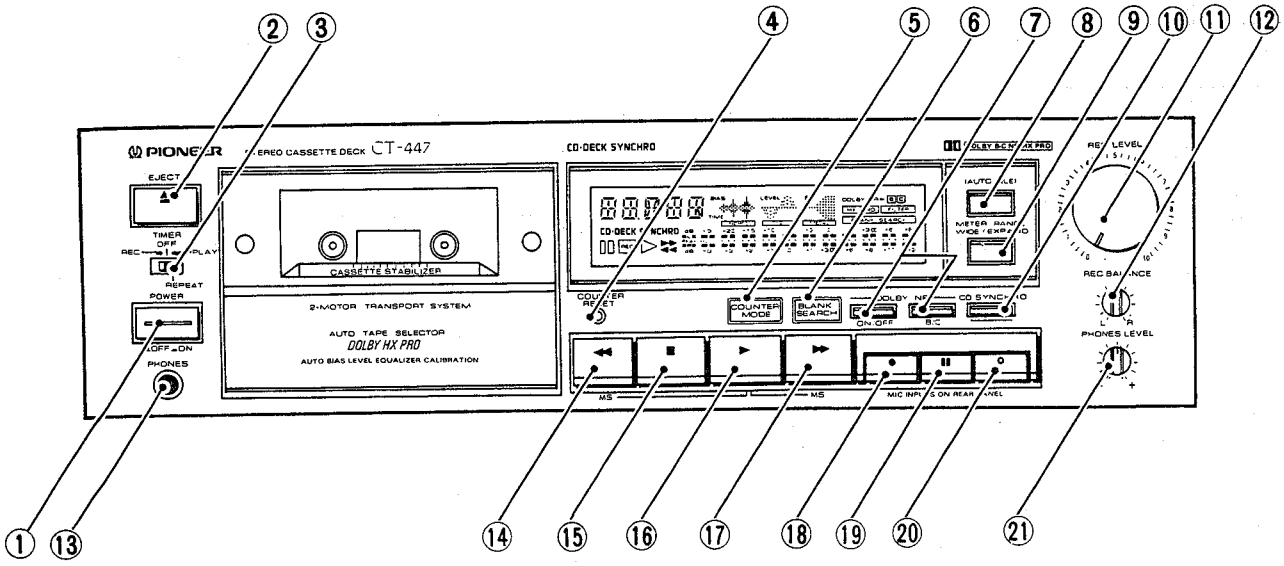
NOTES:
- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

• Contrast of Miscellaneous Parts

The CT-447/HB and CT-447-S/HEWM types are the same as CT-447/HEM type with the exception of the following sections.

Mark	Symbol & Description	Parts No.			Remarks
		CT-447HEM	CT-447HB	CT-447-S HEWM	
	Knob A (SLIDE SW)	RAC-668	RAC-668	RAC1219	
	Knob (CD SYNCHRO, DOLBY ON/OFF, B/C TYPE)	RAC1230	RAC1230	RAC1308	
	Knob (TACT)	RAC1349	RAC1349	RAC1347	
	Knob (EJECT)	RAC1361	RAC1361	RAC1494	
	Knob (OPERATION)	RAC1362	RAC1362	RAC1495	
	Knob (VR)	RAC1363	RAC1363	RAC1496	
	Button (POWER)	RAC1364	RAC1364	RAC1497	
	Knob (REC BALANCE)	RAC1366	RAC1366	RAC1498	
	Knob (PHONES LEVEL)	RAC1416	RAC1416	RAC1499	
	Door panel	RAH1678	RAH1678	RAH1679	
	Mold (EJECT)	RNK1313	RNK1313	RNK1314	
	VR Escutcheom	RNK1315	RNK1315	RNK1316	
	Operating instructions (Dutch/Swedish/Spanish/ Portuguese/French/German/ Italian)	RRD1077	- - - - - - - -	RRD1077	
	Packing case	RHG1197	RHG1197	RHG1198	
	Bonnet	RXX1292	RXX1292	RXX1295	
	Front panel ass'y	RXX1293	RXX1293	RXX1294	
⚠	AC power cord	PDG1003	PDG1004	PDG1003	
	Button panel	RAH1680	RAH1680	RAH1681	

11. PANEL FACILITIES



① POWER switch (■ OFF/ ▬ ON)

② EJECT button (▲)

Press to open the cassette door after you have pressed stop button (■) and the tape has stopped.

NOTE:
If the power is turned off while the tape is moving, the cassette door may remain locked. In this case, turn the power on before pressing the EJECT button.

③ TIMER mode selector

OFF:
Normally, be sure to leave the switch in this position.
REC:
For timer recording.
PLAY/REPEAT:
For timer playback or for repeat playback.

- Recording or playback may suddenly start when turning the power on with this switch in the REC or PLAY position.

④ Tape/Time COUNTER RESET button

Press this button to zero the tape/time counter.
Resets the tape/time counter reading to "0000".

⑤ COUNTER MODE button

Used to select the tape/time counter display mode.
Each time this button is pressed, one of the following two modes is set in sequence.

⑥ BLANK SEARCH button

To find unrecorded portions on the tape.

⑦ DOLBY* NR switches

Set these switches to B or C for recording with the built-in Dolby Noise Reduction Systems and for playback of tapes which have been recorded using the Dolby Noise Reduction Systems. To play other tapes, set DOLBY NR switch to OFF. When DOLBY NR switch is set to ON, the MPX filter function operates in synchronization with the Dolby Noise Reduction System. The operation of this filter may causes some high frequencies to be muted when the Dolby NR system is used for recording of FM broadcasts from some tuners.

*

- *Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen.*
- *"DOLBY", the double-D symbol ◻◻ and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.*

NOTE:
When playing back Dolby NR-encoded tapes, always set this switch to the same position (B or C) used for recording.

⑧ AUTO BLE button

This button allows to automatically set optimum recording bias, level and equalizer for the cassette tape. To use AUTO BLE, set the cassette tape and press this button.

⑨ METER RANGE WIDE/EXPAND button

Switches the display of the level meter range to WIDE/EXPAND.

⑩ CD SYNCHRO button

This button is used to carry out CD-Deck synchro recording from a CD player.

⑪ REC LEVEL control

② REC BALANCE control
To balance the recording level between left (L) and right (R) channels.

③ PHONES jack

④ Rewind button (◄◄)
To rewind the tape in the direction of the arrows. When this button is pressed during playback of a selection, the same selection will be played again. If pressed in the blank between two selections, the selection before the current tape position will be played. The unit will skip one selection in reverse direction for each time the (◄◄) button is pressed.

⑮ Stop button (■)
To stop all operations.

⑯ Playback button (►)
To playback the front side of the tape, that is the side whose label is visible.

⑰ Fast forward button (►►)
To fast-forward the tape in the direction of the arrows. When pressed during playback, the unit will skip one selection in forward direction for each time the (►►) button is pressed.

⑱ Recording button (●)
When the recording (●) button is pressed. the unit is set to recording standby mode.
Press the pause (▮▮) button or playback (►) button when ready to record.
The unit will not enter the recording standby mode if loaded with a cassette with broken erasure prevention tabs.

⑲ Pause button (▮▮)
To stop tape transport momentarily during recording or playback. To resume operation press it again. This can also be done by pressing the playback (►) button. This button does not work during fast-forward and rewind.

⑳ Recording mute button (O)
Press this button during recording to create a blank portion of approx. 4 seconds on the tape. The unit will then enter the recording standby mode.
To make a blank space longer than 4 seconds, the button can be held depressed for the desired duration. Upon releasing the button, the unit will enter the recording standby mode.

㉑ PHONES LEVEL control

12. SPECIFICATIONS

System ..... 4 track, 2-channel stereo
Heads ..... "Hard Permalloy" recording/playback head × 1
"Duble gap ferrite"erasing head × 1
Motor ..... DC servo capstan motor × 1
DC reel motor × 1
Wow and Flutter ..... No more than ±0.14% (DIN)
Fast winding Time ..... Approximately 90 seconds (C-60 tape)
Frequency Response (±6 dB)
−20 dB recording:
Normal tape ..... 20 to 17,000 Hz
Chrome tape ..... 20 to 17,000 Hz
Metal tape ..... 20 to 19,000 Hz
Signal-to-Noise Ratio
Dolby NR OFF ..... More than 57 dB
Noise Reduction Effect
Dolby B-type NR ON ..... More than 10 dB (at 5 kHz)
Dolby C-type NR ON ..... More than 19 dB (at 5 kHz)
Harmonic Distortion ..... No more than 0.7% (0 dB)
Input (Sensitivity)
LINE (INPUT) ..... 63 mV (Input impedance 52 kΩ)
MIC (REAR) ..... 0.4 mV
Output (Reference level)
LINE (OUTPUT) ..... 316 mV (Output impedance 3.3 kΩ)
PHONES ..... 0.9 mW
(load impedance 8Ω, Headphone level control max.)

Subfunctions

- Dolby B-type and C-type NR Systems
- DOLBY HX PRO system
- MPX FILTER (Interlocks with Dolby NR switch)
- Auto tape selector (NORM/CrO_2/METAL)
- Blank search
- Headphones jack with level control
- 4-digit electronic tape/time indicator (Displays the operation mode in 5 digits)
- Music search up to ± 15 selections
- Automatic space recording mute
- AUTO BLE calibration system
- FL level meter 10 + 1 segments
- Timer Recording/Playback (Automatic repeat ON)
- SR System remote control available
- CD·DECK synchro recording capability
- Microphone jacks (Rear panel)

Miscellaneous

Power Requirements
European model ..... a.c. 220 Volts~, 50/60 Hz
U.K. model ..... a.c. 240 Volts~, 50/60 Hz
Power Consumption ..... 20 W
Dimensions ..... 420 (W) × 130 (H) × 272 (D)mm
16-9/16 (W) × 5-1/8 (H) × 10-5/8 (D) in
Weight (without package) ..... 4.3 kg (9 lb 7 oz)

Accessories

Operating instructions 1
Connection cord with pin plugs 2
CD·Deck synchro control cord 1
SR System remote control cord 1

NOTE:
Specifications and design subject to possible modifications without notice, due to improvements.